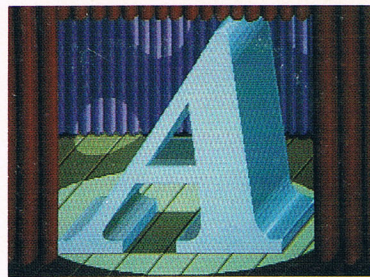
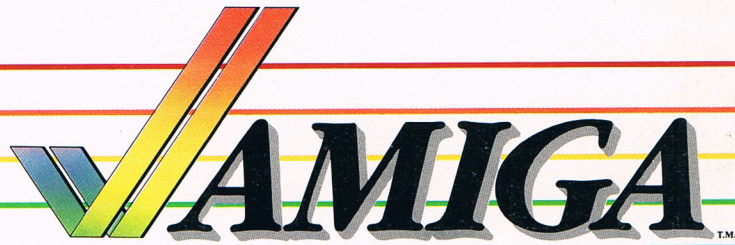


Introduction to



AMIGA

Introduction to
Amiga



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WARNING: This equipment has been certified to comply with the limits for a Class B computing device, pursuant to subpart J of Part 15 of FCC rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

The last four digits of the Amiga serial number indicate the month and year of manufacture.

Printed in U.S.A.

CBM Product Number 372100-04 Rev. D 2-12-86

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Chapter 1

Introducing the Amiga



Welcome! You're about to meet an extraordinary personal computer. It's powerful, yet it's easy to learn and use. It's agile: it can work at several tasks all at the same time. It's colorful and musical. In this manual, you'll meet the Amiga and learn how you can use it both at work and at play.

About This Manual

This manual is for everyone who uses an Amiga. Chapter 2, “Setting Up the Amiga,” shows how to put your Amiga together. If you’re using an Amiga for the first time, read Chapter 3, “Getting Started,” to learn the basics.

Chapter 4, “Using the Workbench,” describes many of the important tasks you perform when using an Amiga.

Chapter 5, “Adding to the Amiga,” describes printers, extra memory, and other add-ons available for your Amiga.

Chapter 6, “Caring for the Amiga,” tells how to keep your Amiga in good working order.

Chapter 7, “Reference,” includes specifications for the Amiga, as well as information about:

- how to change many of the settings for your Amiga
- the Amiga input/output connectors

Appendix A, “Workbench Tools,” tells about:

- the Amiga’s built-in clock, calculator, and notepad
- tools that demonstrate the Amiga’s graphics
- a tool for changing Workbench icons

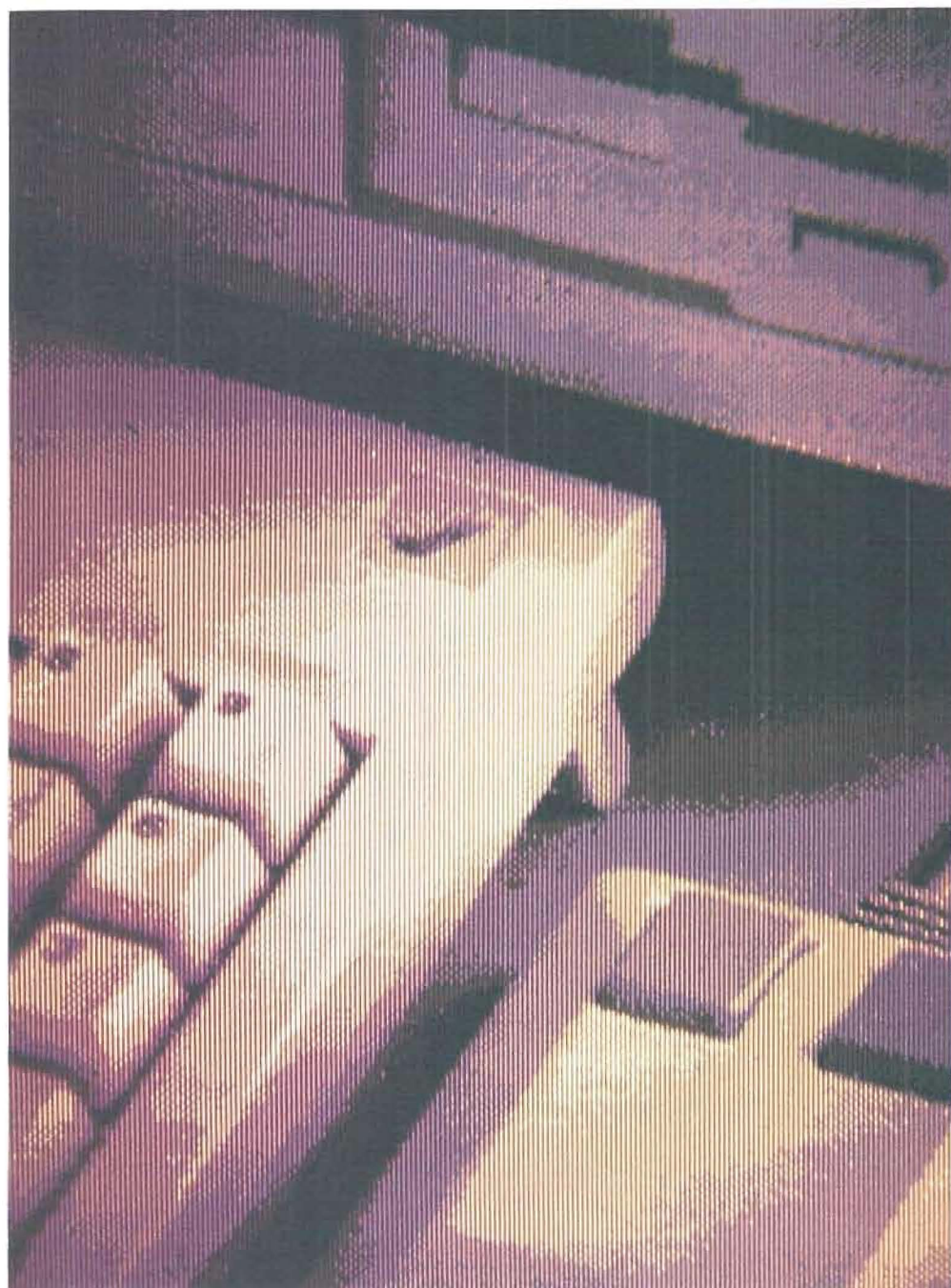
Appendix B, “AmigaDOS Messages,” lists Amiga error numbers and what to do if you get one.

Appendix C, “Changing the Pointer,” shows you how to modify the image that moves on the display when you move the Amiga’s mouse.

At the end, you'll find a glossary of important terms and an index. Terms from the glossary are shown in *italics* where they first appear in the text.

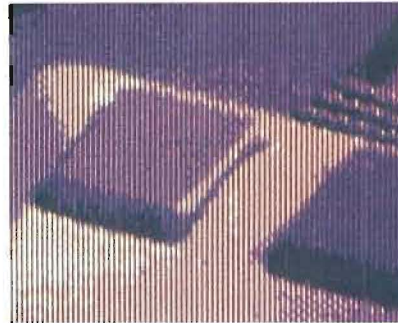
For More Information

See the *Graphicraft*, *Textcraft*, and *Amiga Basic* manuals to learn how to use these tools. If you are interested in developing software for the Amiga, or if you'd like to learn the details of how the Amiga works, see the *Amiga Hardware Manual*, the *Amiga ROM Kernel Manual*, the *AmigaDOS Manual*, and *Intuition: The AMIGA User Interface*. These manuals are available from your Amiga dealer.



Chapter 2

Setting Up the Amiga



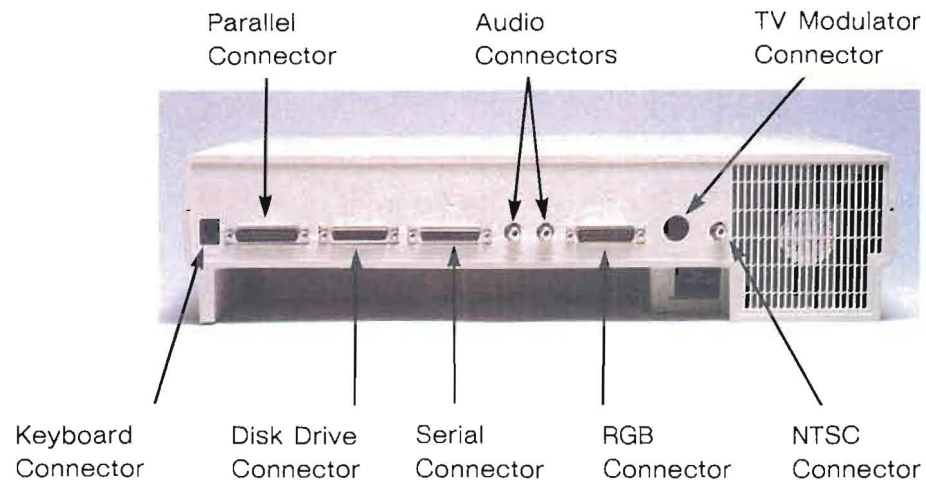
Your Amiga takes only a few minutes to put together. Here are the things you'll find packaged with the Amiga:

- the *main unit*
- the AC power cord
- the *keyboard*
- the *keyboard cable*
- the *mouse*
- three *microdisks*
- manuals, including the one you're reading now
- warranty information



Where to Find the Connectors

On the back of the main unit, you'll find a number of *connectors*. These are places where you attach cables and other devices:



On the right side of the main unit, you'll find two more connectors labeled "1" and "2":



Before You Start

Before putting your Amiga together, **be sure to read each instruction carefully.** While it's not difficult to assemble the Amiga, it *is* possible to damage it if you don't follow the instructions.

When you attach any of the cables or insert anything into a connector, remember: **use a minimum of force.** You can tell when a cable and connector are properly mated when the end of the cable first slides into the connector, then stops when it is in as far as it will go. Always start by pushing gently on the end of a cable. If the cable doesn't slide inward, check the cable and connector to make sure they match and that they're properly oriented before applying more force.

Attaching the Keyboard

Find the keyboard cable, the coiled cable that's straight at one end. Plug the straight end into the *keyboard connector* on the back of the Amiga:



Now put the rest of the keyboard cable underneath the main unit. There's a square opening for the cable to pass through:



Finally, plug the other end of the keyboard cable into the keyboard:



You can change the tilt of the keyboard by folding down the two legs on the bottom. Try both positions to find the tilt that's most comfortable:



With the legs folded up, you can slide the keyboard under the main unit. This helps save space on your work surface when you're not using the Amiga:



Attaching the Mouse

Before attaching a new mouse, turn the mouse upside down and pull out the piece of foam that holds the *mouse ball* in place. (If you don't get all the foam out, see the "Cleaning the Mouse" section in Chapter 6 to find out how to uncover the mouse ball.)

To attach the mouse, just plug the end of the mouse's cable into the connector labeled "1" on the right side of the main unit. (It's a tight fit; this helps keep the plug in place. Be sure to press firmly.)



If you're right-handed, you'll probably want the mouse to the right of the keyboard. If you're left-handed, try putting the mouse to the left. Make sure that the place you set aside for the mouse is at least 12 inches by 12 inches (30 centimeters by 30 centimeters) and that it's clean and flat.

Attaching the Video Monitor

The *video monitor* displays visual information. There are three kinds of video monitors you can use with the Amiga:

- an *RGB monitor*. The *Amiga Monitor* available from Amiga dealers is an RGB monitor. RGB monitors normally produce the best-quality display.
- an *NTSC (composite video) monitor*. There are many kinds of NTSC monitors made specifically for computers. In addition, many newer televisions have NTSC connectors that allow you to connect them directly to computers.
- a television. Conventional televisions (those without NTSC connectors) can also be used as monitors for the Amiga.

When choosing a monitor, note that televisions and NTSC monitors cannot display as much information as RGB monitors. RGB monitors can show 80 characters clearly on each line on the display, while most televisions and NTSC monitors can show only 60 characters clearly.

Attaching an RGB Monitor

To attach an Amiga Monitor, use the *video cable* supplied with the monitor. Plug the small end of the video cable into the connector on the back of monitor:



Plug the large end of the cable into the *RGB connector* on the back of the Amiga:



To attach other RGB monitors, see your Amiga dealer for the correct cable and instructions.

Attaching an NTSC Monitor

To attach an NTSC monitor or a television with an NTSC connector to the Amiga, use a shielded cable with a *phono plug* at each end. (You can get this cable from your Amiga dealer.) Plug one end of the cable into the appropriate connector on the monitor, then plug the other end into the NTSC connector on the back of the Amiga:



Attaching a Television

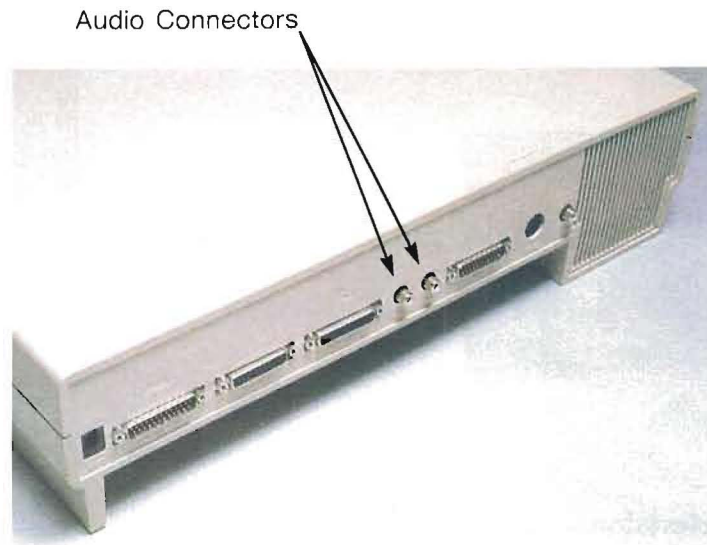
To use a conventional television as a monitor, you need:

- a *TV modulator*
- a *TV modulator cable*
- a *TV switch box*

You can get these from your Amiga dealer. You'll find instructions packaged with them.

Connecting Audio Equipment

The Amiga produces high-quality stereo sound. There are two connectors on the back of the Amiga for connecting the Amiga to audio equipment:



Unless you've attached a conventional television to the Amiga with a TV modulator, you need to connect the Amiga to either an audio system or the audio connector found on some monitors to hear sounds produced by the Amiga.

Connecting the Amiga to a Stereo System

To connect the Amiga to a stereo system, you need two cables. Each cable must on one end have a plug that fits the input connector on your amplifier or receiver (this is most often a phono plug) and on the other end have a phono plug to fit into the Amiga.

On most stereo systems, there are extra inputs, often labeled “Auxiliary” or “Aux,” to which you attach one end of each cable. . On the back of the Amiga are two *audio connectors*, one for the left audio signal and one for the right audio signal. Insert the other end of each cable into the appropriate audio connector:



Sound Connections for Monitors

Some monitors, including the Amiga Monitor, have a built-in speaker. To connect a monitor for sound, you need:

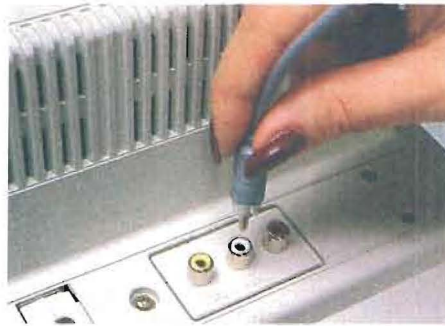
- a “Y” *adapter* that converts the two stereo channels from the Amiga to a single channel
- a cable for connecting the “Y” adapter to the audio connector on the monitor

You can get “Y” adapters and connecting cables from many stores that carry radio and electronic parts.

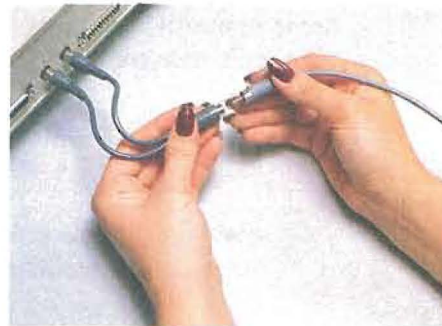
To connect the monitor, insert the two phono plugs at the top of the “Y” into the audio connectors on the back of the Amiga:



Next, insert one end of the connecting cable into the connector on the monitor:

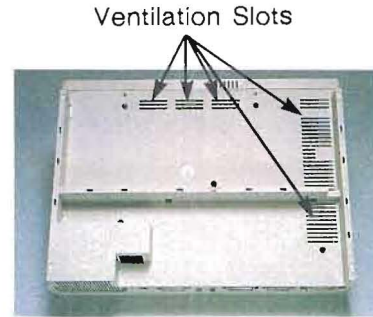
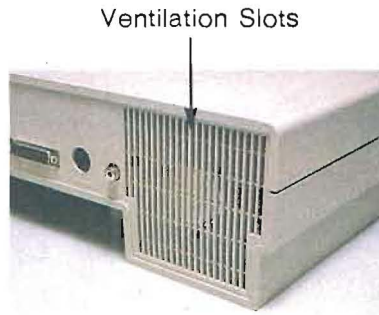


Finally, connect the other end of the cable to the “Y” adapter:



Plugging It In

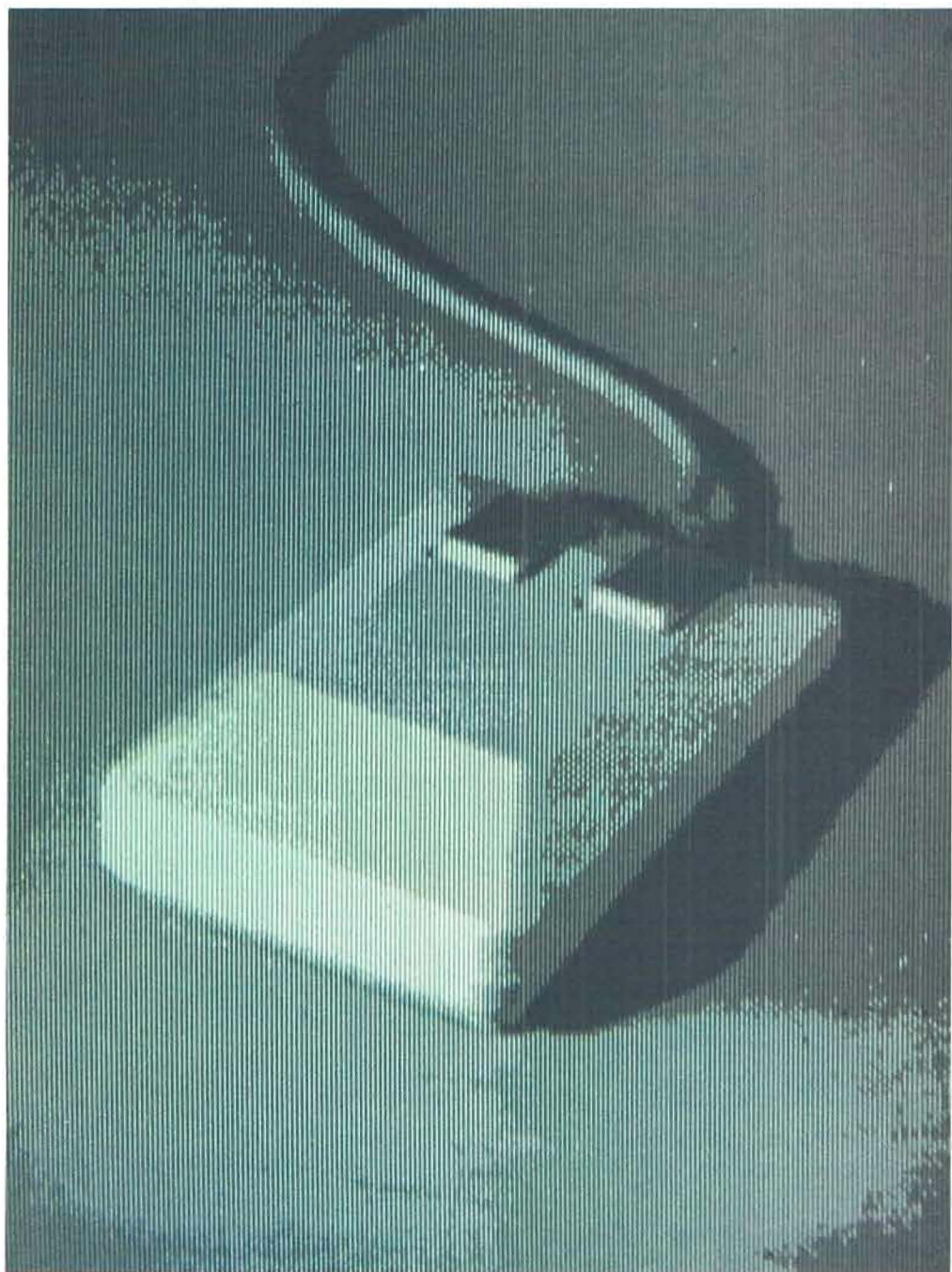
You're almost done putting your Amiga together. Before you plug it in and turn it on, make sure there's nothing covering the ventilation slots on the back or bottom of the main unit:



Plug the six-sided end of the power cord into the main unit:

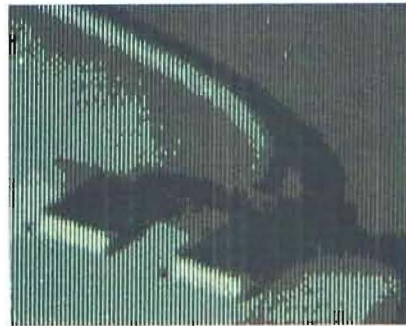


Plug the other end of the power cord into a grounded outlet, and you're ready to start using your Amiga.



Chapter 3

Getting Started



In this chapter, you'll learn the basics of using your Amiga. When you're done, you can start using the *tools*, such as the *Graphicraft*™ color graphics tool, that let you work with the Amiga.

A Note About the Mouse

The descriptions in this chapter (and throughout the rest of this manual) assume you're using a mouse. There are, however, certain keys on the keyboard you can use in place of the mouse. To learn how, see the sections "Moving the Pointer Without a Mouse," "Selecting Without a Mouse," and "Using Menus Without a Mouse" in this chapter.

Using Disks

Start by getting the three microdisks—the *Kickstart disk*, the *Workbench disk*, and the *Extras disk*—that came with your Amiga. These disks contain important information used by the Amiga. In addition, have three blank microdisks ready. (You can get blank microdisks from your Amiga dealer.) You'll copy the information from the original disks onto these blank disks and keep the originals in a safe place.

Your original Amiga disks may have *protect tabs*. These are small plastic tabs on the backs of the disks. If you find protect tabs on the original disks, slide each tab toward the edge of the disk until it clicks into place. When you do, you'll be able to see through a small hole in each disk:

Protect Tab



Disk is protected



By putting the protect tabs in this position, you prevent the information on the disks from being changed while they're in the Amiga.

On each of the three blank disks, make sure that the protect tab is toward the middle of the disk, so that it covers the hole. With the tab in this position, you can add new information to a disk:

Disk is unprotected



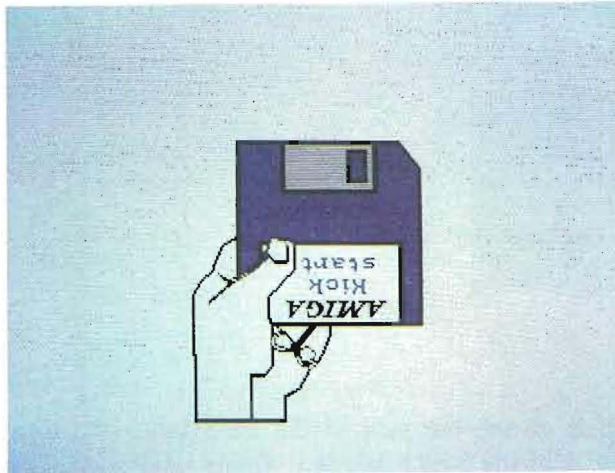
The On/Off switch is on the left side of the main unit. To turn on the Amiga, press the end of the switch labeled "ON":



A word of warning:

Whenever you turn off the Amiga, always wait AT LEAST 5 seconds before turning it on again. If you don't observe this precaution, you may damage the Amiga.

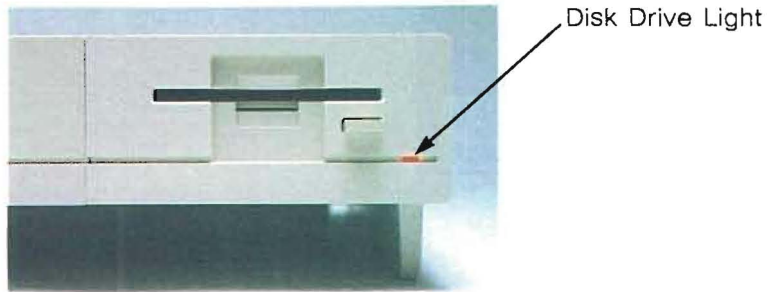
Next, turn on the monitor or television attached to your Amiga. In a few moments, you'll see a picture of a hand holding a Kickstart disk:



This is your cue to insert the Kickstart disk—metal end in, label side up—into the *disk drive*, the device that reads information from disks and adds information to them. Push in the disk until it clicks into place:



After you put in the disk, you'll hear sounds from the Amiga. These are the sounds the disk drive makes as it gathers information. In less than a minute, the Amiga will get the information it needs—with the help of the disk drive—from the Kickstart disk. Notice that while the disk drive is working, the *disk drive light* is on:

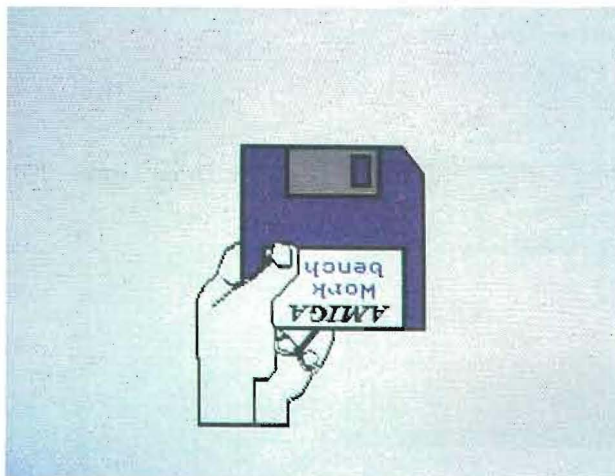


A word of warning:

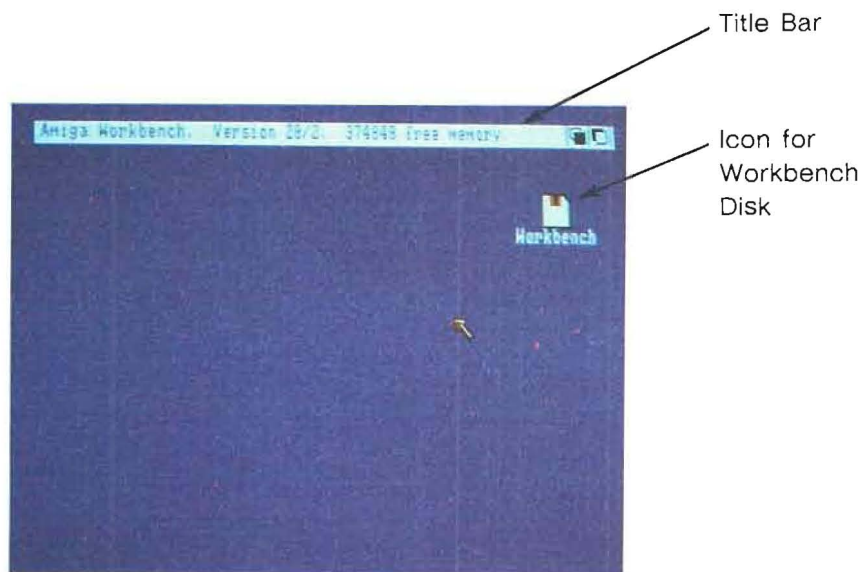
NEVER remove a disk when the disk drive light is on.

The disk drive light tells you that the Amiga is using the disk. Taking a disk out too soon may make it impossible for the Amiga to finish an important task, such as reading the information from the Kickstart disk. Even worse, taking a disk out too early may ruin the information on a disk. Always wait for the disk drive light to turn off before you remove a disk.

When the Amiga is finished with the Kickstart disk, the disk drive light turns off and the hand reappears, this time holding the Workbench disk:



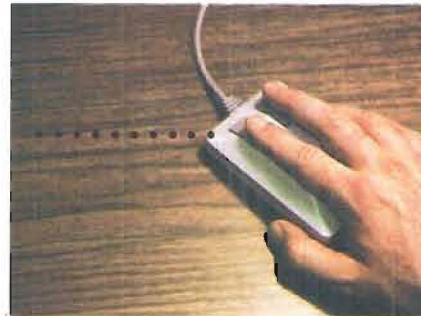
Take out the Kickstart disk by pressing the button on the front of the disk drive, then insert the Workbench disk. In a few moments, you'll see the *Workbench*:



At the top is a *title bar* that identifies the Workbench. On the Workbench is an *icon*, a small picture that represents the Workbench disk. You'll learn more about icons later in this chapter.

Moving the Pointer

You use the *Pointer*, the small arrow on the display, to *point* to the things you want to work with. Moving the mouse moves the Pointer. Without pressing either of the *mouse buttons* on top of the mouse, try rolling the mouse. Be sure to hold the mouse as shown below:



To point, move the Pointer so that its tip is over the thing you want to point to:

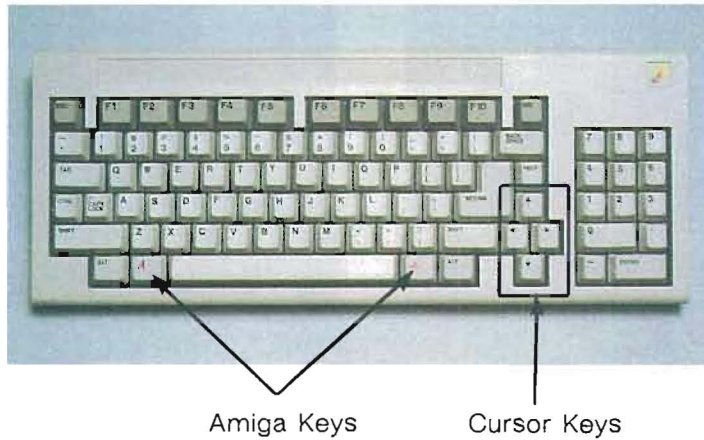


When you first use the mouse, don't worry if it feels a bit clumsy. Once you're familiar with it, you'll find that using the mouse is very quick and convenient.

If you run out of room for your mouse before you get the Pointer where you want it, just lift the mouse and put it down where there's more room. Lifting the mouse doesn't move the Pointer.

Moving the Pointer Without a Mouse

To move the Pointer without a mouse, *hold down* either of the *Amiga keys*, then, with the Amiga key still down, hold down a *cursor key*:



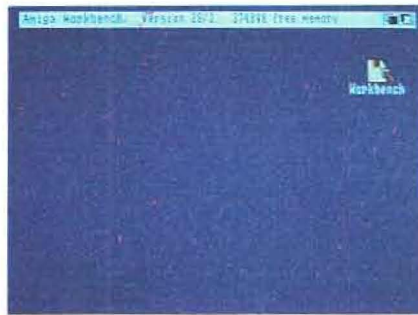
With an Amiga key held down, the Pointer moves in the direction of the arrow on top of the cursor key you press. The longer you hold down the keys, the faster the Pointer moves. To make the Pointer move even faster, hold down both the SHIFT key and an Amiga key while you hold down a cursor key. To stop moving the Pointer, *release* the cursor key.

Selecting Icons

You use the *Selection button*, the left button on the mouse, to *select* icons and other features. Try selecting the icon for the Workbench disk:



Point to the Workbench disk icon, then *click* (*press* and quickly *release*) the Selection button:



The icon for the Workbench disk is *highlighted* to indicate that it's selected.

Selecting Without a Mouse

To select an icon without using a mouse, first point to the icon, then press both the left Amiga key and the left *ALT* key at the same time:



Left ALT Key

Left Amiga Key

Anything you do by pressing the Selection button on the mouse you can also do by pressing the left Amiga key and the left ALT key at the same time.

Using Menus

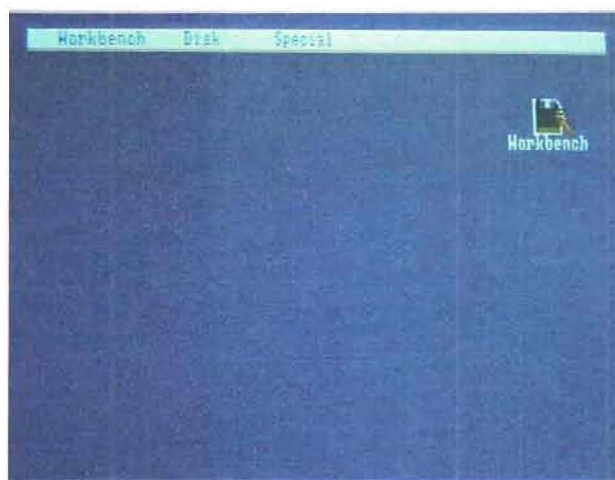
For most tools, including the Workbench, there are *menus* that list choices you can make. To use menus, you use the *Menu button*, the right-hand button on the mouse. The best way to learn how menus work is to try one:



Select the icon for the Workbench disk if it isn't already selected.

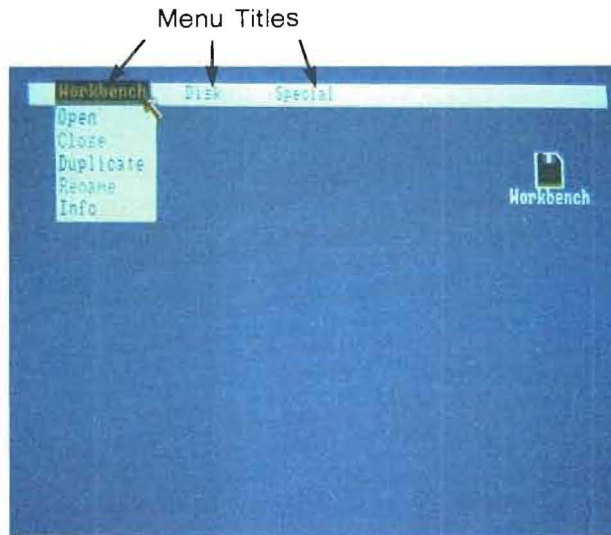


Hold down the Menu button. When you do, the *Menu Bar* appears. In the Menu Bar are *titles* of menus:

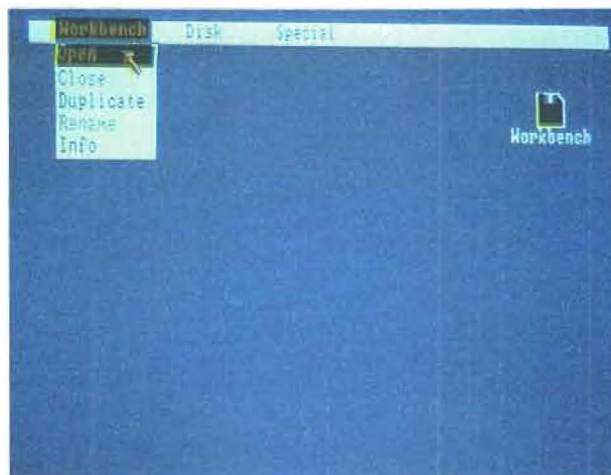




Without releasing the Menu button, point to the title Workbench in the Menu Bar. The *Workbench menu* appears:



While keeping the Menu button down, point to Open in the menu. Open is highlighted:

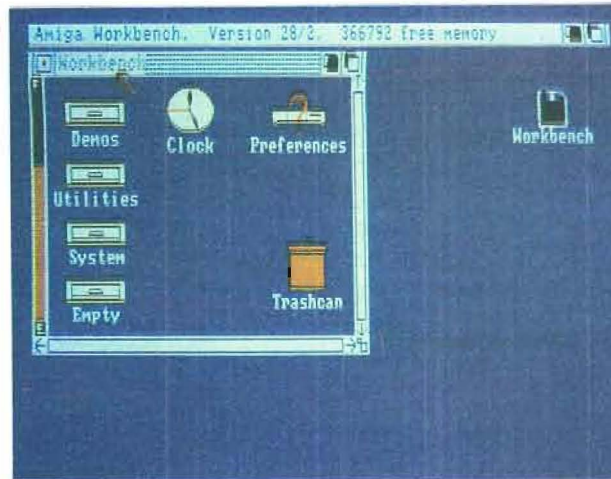




Choose Open by releasing the Menu button while Open is highlighted.

By choosing the Open item from the Workbench menu, you *open* a *window* for the Workbench disk:

Window for
Workbench
Disk



In the window, you see icons that represent the contents of the Workbench disk.

If you decide you don't want to choose a menu item, move the Pointer off the menu before releasing the Menu button.

To browse through a tool's menus, just hold down the Menu button while moving the Pointer along the Menu Bar. Without choosing an item, you'll get to look at the menu items that are available.

Using Menus Without a Mouse

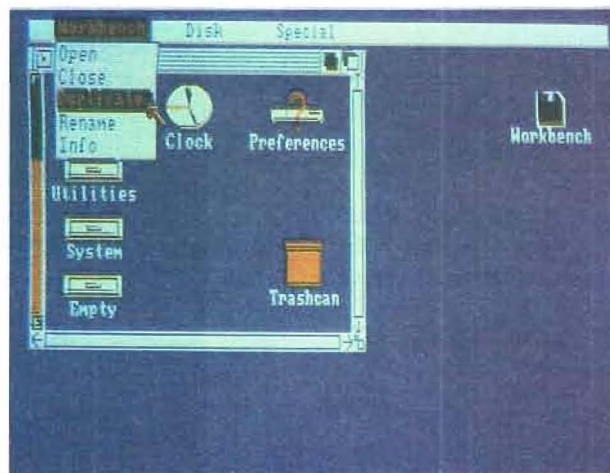
Just as pressing the left Amiga key and the left ALT key at the same time is like pressing the Selection button, pressing the right Amiga key and the right ALT key at the same time is like pressing the Menu button. To use menus without a mouse, hold down the right Amiga key and right ALT key while you move the Pointer with the cursor keys. When the menu item you want is highlighted, release the right Amiga key and right ALT key.

Duplicating Your Disks

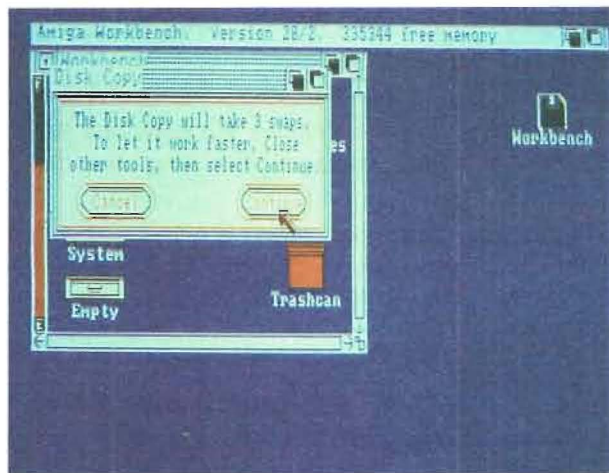
It's important to make duplicates of your original disks and keep the originals in a safe place. You then use the duplicates, called *working disks*, for everyday use. Before you do anything else with the Workbench, follow these directions for duplicating disks:



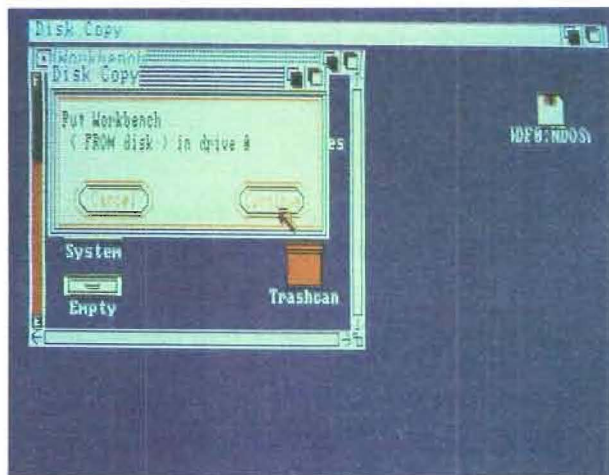
Select the icon for the Workbench disk, then choose Duplicate from the Workbench menu:



A *requester* appears. A *requester* is something the Amiga uses to communicate with you. Here, the requester tells you how many times you'll have to change disks as you copy. Select Continue to go on:



A new requester asks you to put the disk you want to duplicate in drive 0. (Drive 0 is the disk drive in the main unit. Drive 1 is an external disk drive.) Since the Workbench disk is already in drive 0, select Continue to go on:



Next you'll see a requester that asks you to insert the disk to receive the copy. Take out the Workbench disk, insert one of the blank disks, then select Continue.

Finally, there is a series of requesters asking you to exchange disks. (In these requesters, "volume" is another term for "disk.") Insert the disk each requester asks for, then select Continue.

When you've finished copying the disk, remove the copy and label it using one of the self-adhesive disk labels packaged with most new disks.

Copy the other two disks in the same way: insert the disk you want to copy, select the icon for the disk, choose Duplicate from the Workbench menu, then follow the instructions in the requesters. Be sure to label the copies when you're finished.

When you've made copies of all three disks, put the original disks in a safe place and use only the working disks. That way, if you lose or damage a working disk, you'll be able to make another copy from the original. To learn about proper care for your disks, see Chapter 6, "Caring for the Amiga."

Before going on, you need to insert the newly copied Workbench disk, then *reset* the Workbench. To reset, **make sure the disk drive light is off**, hold down the CTRL key, the left Amiga key, and the right Amiga key at the same time for at least half a second, then release the keys. When you reset the Workbench, you clear the Amiga's *memory*—the electronic circuits the Amiga uses to store information—then the Workbench reappears. You're back to where you were when you first inserted the Workbench disk.

Two warnings:

NEVER reset the Workbench when a disk drive light is on. Resetting when the light is on may damage the information on the disk.

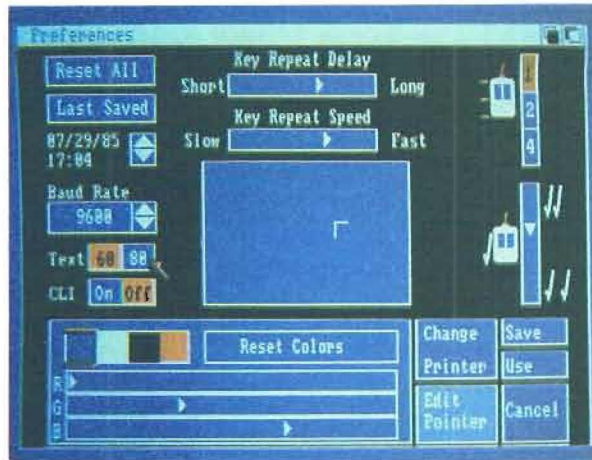
When you reset the Workbench, any work that has not been saved to disk is lost. When you begin using the tools on the Amiga, remember to save your work before you reset.

Using a Tool: Preferences

With the *Preferences* tool, you can make a number of changes to your Amiga. In Chapter 7, you'll find a complete list of Preferences settings. Here, you'll learn how to start using Preferences, how to use Preferences to get the most from your monitor, and what to do when you're finished using Preferences.



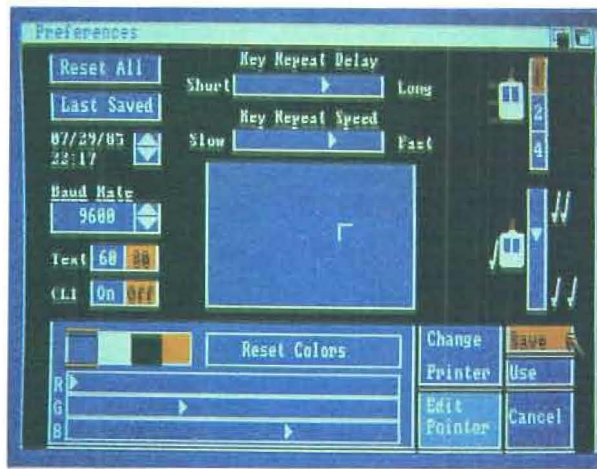
Select the icon labeled "Copy of Workbench," then choose Open from the Workbench menu. When the Preferences icon appears, select it, then choose Open from the Workbench menu. A window for Preferences appears:



Tools use windows to display information and to accept information from you. The Preferences window shows you the current settings for Preferences and lets you change them.

At the left of the Preferences window, you set the number of *characters* (letters, numbers, and symbols) that appear on each line of the display. To the right of the word Text are two *gadgets*, one marked 60 and the other marked 80. If you're using an Amiga Monitor or another RGB monitor, select 80. If you have an NTSC monitor or television attached to your Amiga, select 60.

When you're done, select Save to save your choices on the Workbench disk and return to the Workbench:



Creating a Project

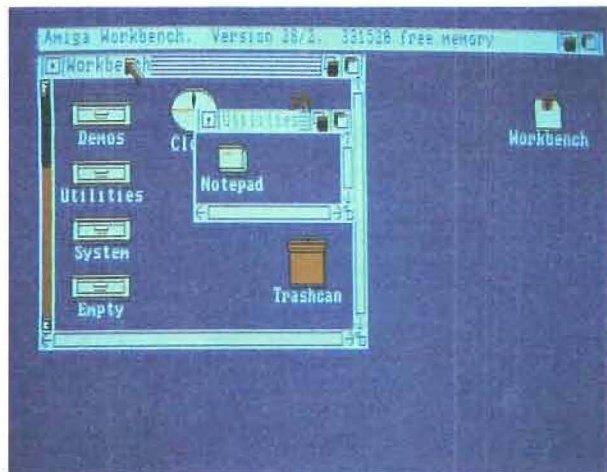
You'll use most Amiga tools to create *projects*. One example of a project is a note you write with the *Notepad*, a tool that is included on your Workbench disk. Here's how to write a note:



Select the Utilities drawer on the Workbench, then choose Open from the Workbench menu:



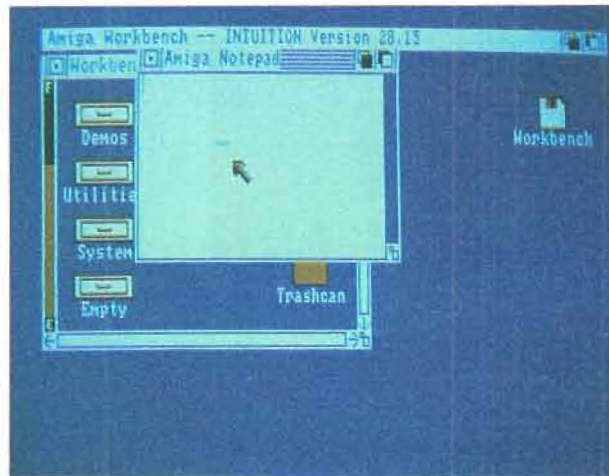
In the window that appears, you'll see the icon for the Notepad:



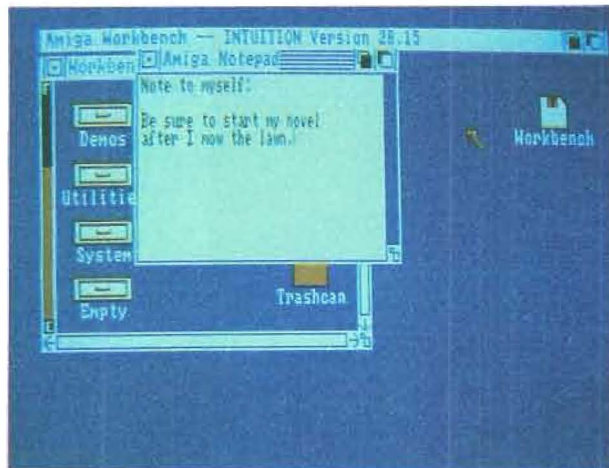
Open the Notepad by selecting its icon, then choosing Open from the Workbench menu.

You can also try another, quicker way to open a tool: point to the icon for the tool, then *double-click* the Selection button. To double-click, quickly press and release the Selection button twice.

In a few moments, a window for the Notepad appears:

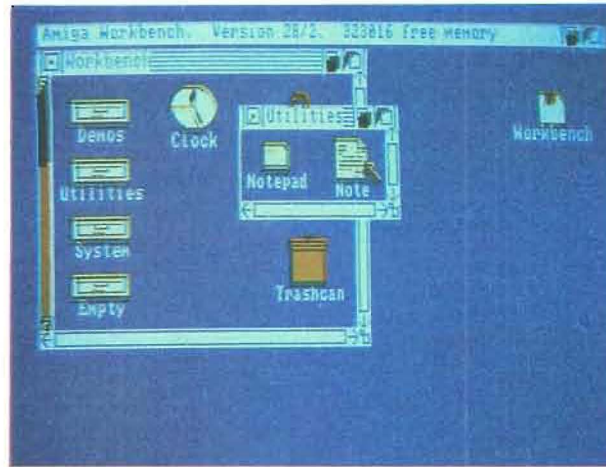


Using the keyboard, type in your note:



To save your note, choose Save As from the Project menu. (Because the Notepad window is selected, you'll see menus for the Notepad in place of the Workbench menus.) Select the box that appears to the right of the word "Name:", type in a name for your note (the name can be up to 25 characters long), press the RETURN key on the keyboard, then select the OK gadget.

When you're done, choose Quit from the Project menu. The next time you open the Utilities drawer, you'll see a new icon. This is the icon for your note:



If you want to get back your note, open it by pointing to its icon and double-clicking the Selection button. When you reopen your note, the Notepad is also reopened. You can then add to or change the note.

Now that you're acquainted with the Workbench, menus, and projects, you're ready to use other Amiga tools. Take time now to become familiar with one or more of the tools. When you're done, read Chapter 4 to learn the many other things you can do with the Workbench.



Chapter 4

Using the Workbench



The Workbench is a tool you use to control the Amiga. This chapter describes the Workbench and the tasks you perform with it.

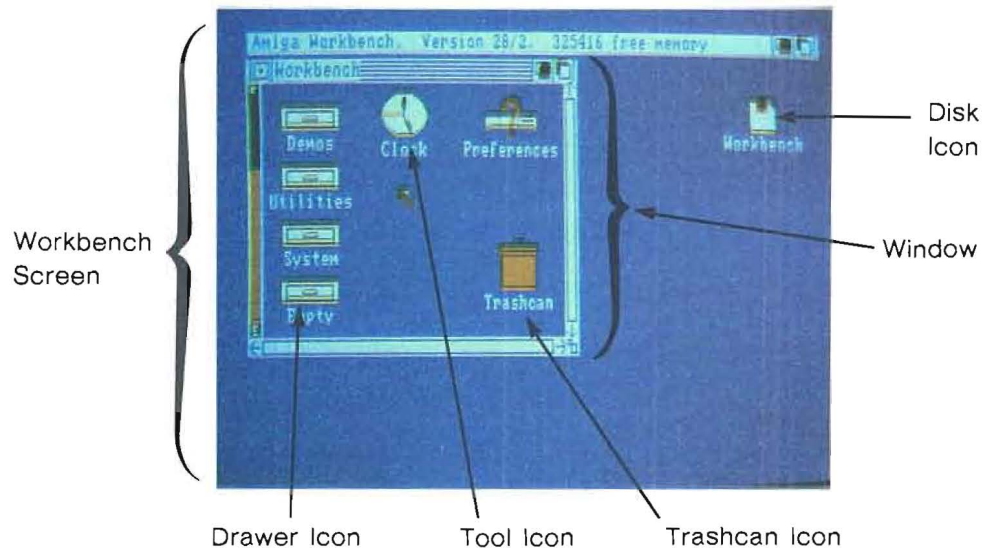
What Is the Workbench?

The Workbench is:

- a tool you use to control the Amiga. You open the Workbench by inserting a disk, called a *Workbench disk*, that contains the Workbench tool.
- an area of the display—a *screen*—set aside for the Workbench.

What's on the Workbench?

When you open the Workbench disk, here are the things you see on the Workbench screen:



Icons

Icons are small pictures that appear on the Workbench. They represent:

- tools
- projects
- disks
- *drawers*, places where you keep tools, projects, and other drawers
- the *Trashcan*, which you use to discard tools, projects, and drawers

Windows

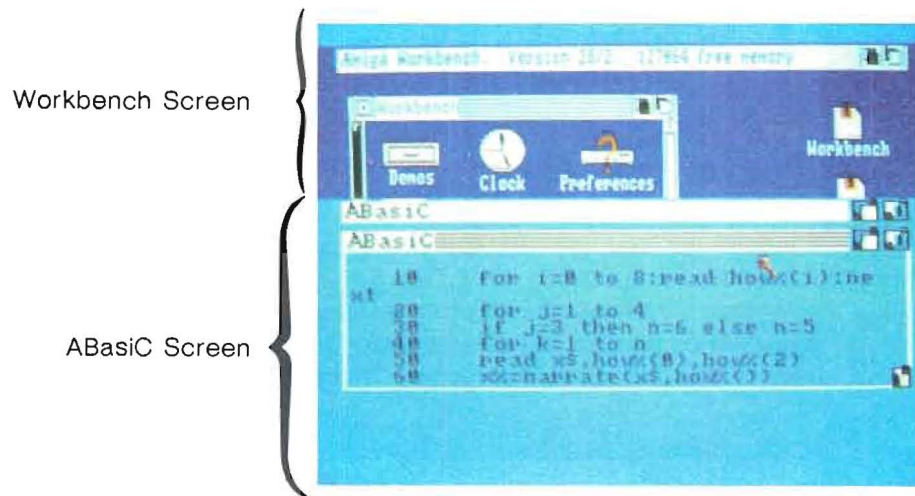
Windows let you see the contents of projects, drawers, disks, and the Trashcan. Each window has a *Title Bar* at the top to identify it. In addition, a window may have one or more *gadgets* that let you change what's being displayed or that let you communicate with a tool. Gadgets are described later in this chapter in the section "Workbench Operations."

Screens

On the Amiga, the way visual information is displayed can be different for different tools. To change the display, tools request different *video attributes*. These attributes include:

- horizontal resolution, the number of *pixels* that appear on each line of the display
- number of colors displayed in the screen
- color palette, the colors that appear in the screen
- interlace, which doubles the number of horizontal lines that appear in the screen

Screens are areas of the display with the same video attributes. They are always as wide as the display. Each screen contains one or more windows:

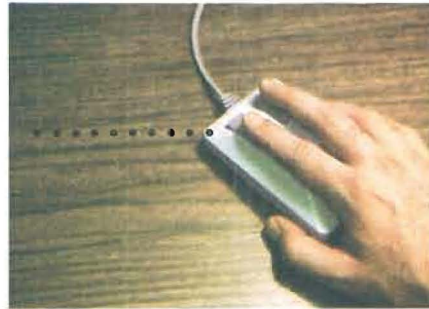


Controlling the Workbench

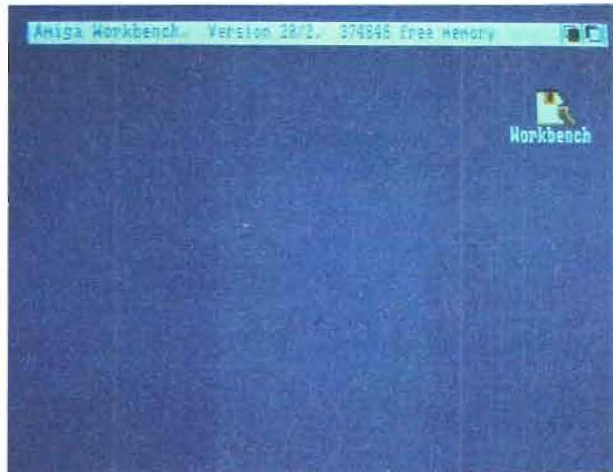
This section explains the techniques you use to perform Workbench tasks. You use many of these same techniques when working with other Amiga tools.

Pointing

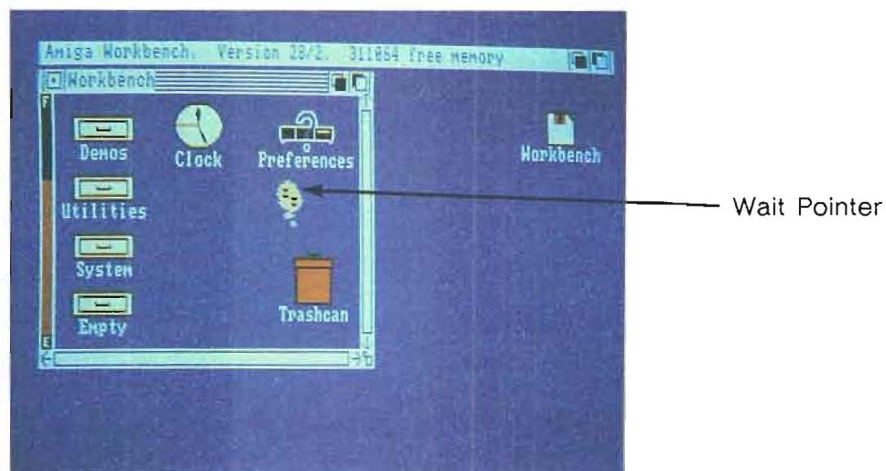
To move the Pointer, you move the mouse:



You *point* to something by moving the Pointer's *point* over it:



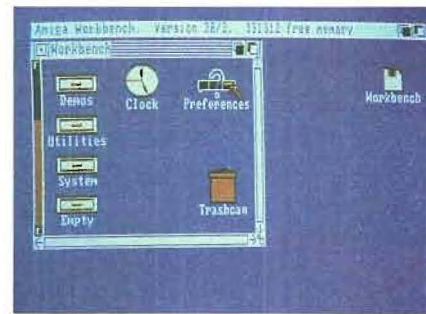
There are times when you must wait for the Workbench to finish an activity before you can continue. When this happens, the Pointer changes shape and becomes a *Wait Pointer*:



When the Pointer returns to its original shape, you can continue working.

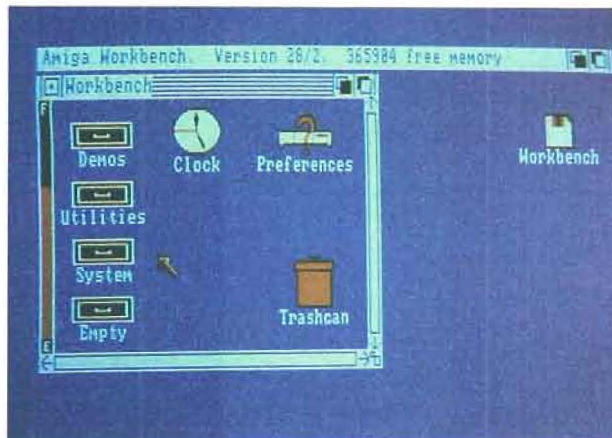
Selecting

To select an icon, point within it, then click the Selection button, the left-hand button on the mouse:



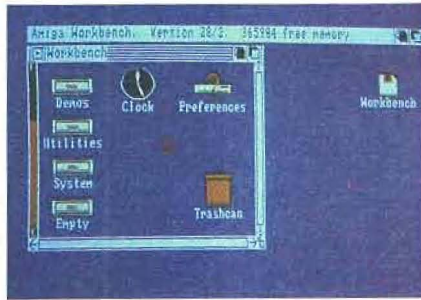
If you no longer want an icon selected, point to a place on the Workbench that isn't occupied by an icon or gadget, then click the Selection button.

Extended Selection is a technique for selecting more than one icon in the same operation. To use it, hold down the SHIFT key while you select icons. Release the SHIFT key when you're done selecting:



Dragging

You move icons, windows, and screens by *dragging* them. To drag an icon, you point to it, hold down the Selection button, and move the mouse. When you hold down the Selection button, the Pointer changes shape:

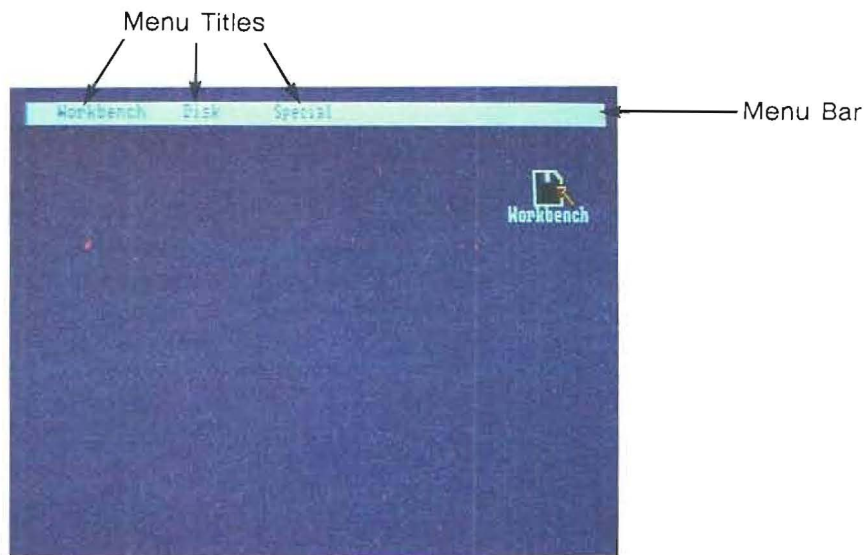


When you release the Selection button, the icon reappears where you've positioned the Pointer.

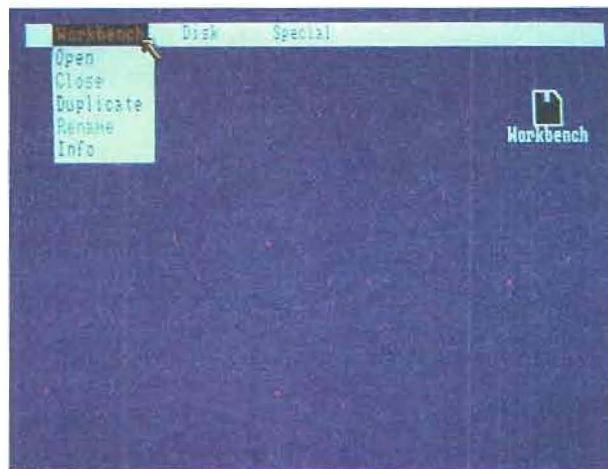
To learn how to drag windows and screens, see the section "Workbench Operations" at the end of this chapter.

Choosing Menu Items

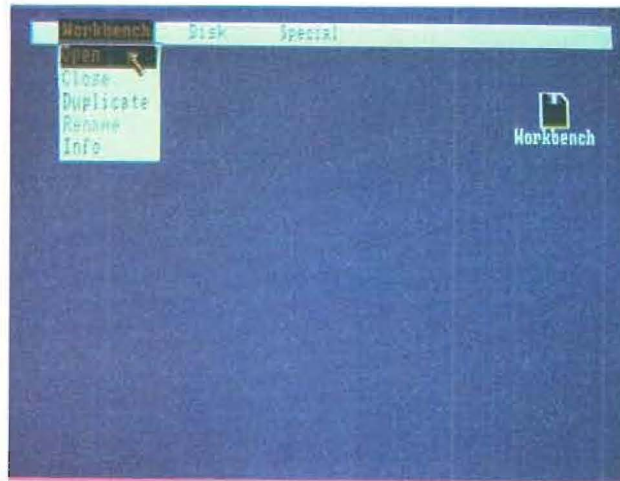
Most tools, including the Workbench, provide menus from which you choose things you can do with the tool. To see the menus that are available, you press the Menu button, the right-hand button on the mouse. When you do, the titles of available menus appear in the Menu Bar, a strip that replaces the Title Bar in the screen in which you're working:



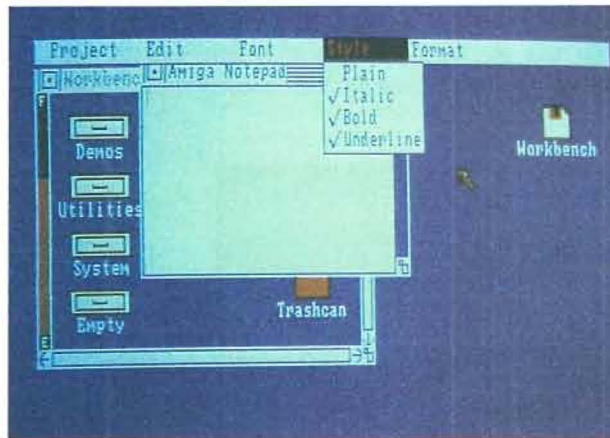
To choose a menu item, hold down the Menu button and move to the title of a menu. The menu appears:



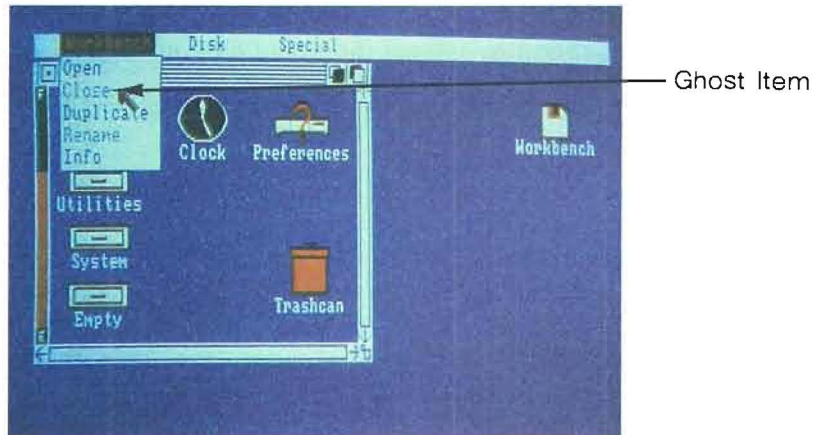
Now point to the item you want to choose and release the Menu button:



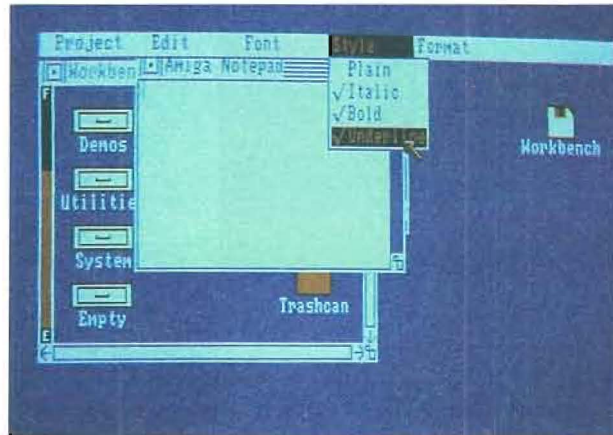
In menus, there are two kinds of items. *Commands* are items that you choose to perform an action. One example of a command is the Open item in the Workbench menu. You choose Open to open a window. *Options* are choices that persist until you choose other, mutually exclusive options. Examples of options are the type styles available in the Amiga Notepad. Options you've chosen are indicated by check marks to the left of the menu items:



In some tools, not all menu items are available at all times. Menu items that you cannot choose appear as *ghost items*:



Multiple Choice is a technique for choosing more than one menu item in the same operation. To use it, hold down the Menu button, then click the Selection button with the Pointer over each of the items you want to choose:



When you're done choosing, release the Menu button.

Shortcuts

A *shortcut* is a quick way, from the keyboard, to select something or to choose a menu item. For a *selection shortcut*, you press a key on the keyboard while holding down the left Amiga key (the key immediately to the left of the Space Bar). For a *menu shortcut*, you press a key on the keyboard while holding down the right Amiga key.

Selection shortcuts for the Workbench are described in the "Workbench Operations" section at the end of this chapter.

Using the Amiga Without a Mouse

On the Amiga, anything you can do with the mouse you can also do from the keyboard:

- To move the Pointer, press an Amiga key and one of the cursor keys (the keys with arrows on top that are to the right of and slightly below the RETURN key) at the same time. This moves the Pointer in the direction of the arrow on the cursor key. The longer you hold down these keys, the faster the Pointer moves.
- To move the Pointer faster, press an Amiga key, the SHIFT key, and one of the cursor keys at the same time.
- Instead of pressing the Selection button (the left button on the mouse), you can press the left Amiga key and the left ALT key (the key just to the left of the left Amiga key) at the same time.
- Instead of pressing the Menu button (the right button on the mouse), you can press the right Amiga key and the right ALT key (the key just to the right of the right Amiga key) at the same time.

Workbench Operations

Using the techniques described in the last section, you can use the Workbench to work with tools, projects, drawers, and disks. This section describes the fundamental Workbench operations.

Operations Involving Tools and Projects

Opening Tools and Projects

When you open a tool or project, you open a window that lets you see the contents of the project or that lets you communicate with the tool. There are two ways to open a tool or project:

- Select the icon for the tool or project, then choose Open from the Workbench menu.
- Point to the icon, then double-click the Selection button.

Opening a project automatically opens the tool used to create it.

On the Amiga, you can have more than one tool open at the same time. This ability is called *multitasking*: the Amiga is able to perform several tasks at once. Note, however, that each new tool you open requires a certain amount of *memory*. Memory is the set of electronic circuits within the Amiga used to keep information. If, when you try to open an additional tool, there isn't sufficient memory for it, the Workbench gives you the message "Cannot open [name of the tool]. Error 103" at the top of the screen.

Duplicating Tools and Projects

Duplicating a tool or project means to make an identical copy in the drawer in which the tool or project resides. To duplicate, select the icon for the tool or project, then choose Duplicate from the Workbench menu.

The name of the new tool or project is "copy of" added to the name of the tool or project that was copied. For example, duplicating the Clock gives you a new tool named "copy of Clock."

Renaming Tools and Projects

To rename a tool or project, select its icon, then choose Rename from the Workbench menu. When the message appears in the Title Bar, select the gadget in the middle of the display, type in the new name, then press the RETURN key.

About String Gadgets. The gadget that appears is called a *String Gadget*. (The term *string* refers to a set of one or more characters.) As you use the Amiga, you'll find that String Gadgets appear in requesters when a tool needs information in the form of text. When you use String Gadgets, note that you can change the string that appears in the gadget. Press the DEL key to delete the characters at and to the right of the *Text Cursor* (the marker that appears in the gadget). Press the BACKSPACE key to delete characters to the left of the text cursor. You can erase what appears in the gadget by pressing the right Amiga key and the X key at the same time. You can get back what was in the gadget before you made any changes by pressing the right Amiga key and the Q key at the same time.

Getting Information About Tools and Projects

To get information about tools and projects, select the icon for the tool or project, then choose Info from the Workbench menu. The information includes the *type* (project, tool, drawer, or disk) of the object you've selected, as well as various measures of its size (note that some of these are only of interest to software developers and others who must deal with the inner workings of the Amiga). You can also change the *status* of the object by selecting one of the gadgets below the word STATUS. The normal setting is DELETABLE, which allows you to delete an object. Select NOT DELETABLE if you want to prevent an object from being deleted.

Discarding Tools and Projects

To discard a tool or project, drag its icon over a Trashcan icon. When you do, the tool or project is kept in a special drawer maintained by the Trashcan. It remains in this drawer until you select the Trashcan icon, then choose Empty Trash from the Disk menu. If you haven't emptied the trash since you last put something in the Trashcan, you can retrieve what you discarded by opening the Trashcan in the same way you open a project, then dragging its icon to an open drawer somewhere on the Workbench. Note that

when you discard something, you do not reclaim disk space until you choose Empty Trash.

You can also discard a tool or project by selecting its icon, choosing Discard from the Workbench menu, then selecting the Retry gadget in the requester that appears. **WARNING:** When you choose Discard to discard a tool or project, you cannot get the tool or project back.

Operations Involving Drawers

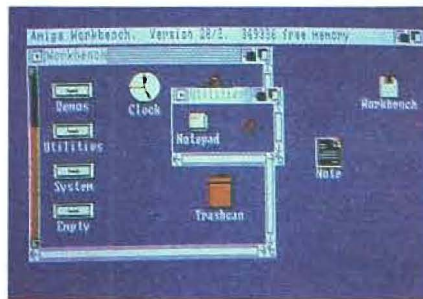
Drawers are places where you can keep tools, projects, and other drawers. You can use drawers to keep order on the Workbench and to keep related items together.

Opening Drawers

You open a drawer in the same way you open a tool or project: either point to the icon for the drawer and double-click the Selection button or select the icon for the drawer, then choose Open from the Workbench menu. Opening a drawer gives you a window in the Workbench screen.

Moving Tools, Projects, and Drawers

To move a tool, project, or another drawer into a drawer, open the drawer into which you want to put the tool, project, or drawer, then drag the icon into the drawer's window:



Another way to move a tool, project, or another drawer into a drawer is to drag the icon over the icon for the drawer into which you want to put it.

Duplicating Drawers

To duplicate a drawer, select the icon for the drawer, then choose Duplicate from the Workbench menu. A new drawer, whose name is “copy of” added to the name of the drawer that was duplicated, appears in the window.

To create a new drawer, you duplicate another drawer. The quickest way is to duplicate the empty drawer that appears on the Workbench, then give the new drawer a new name.

Renaming Drawers

To rename a drawer, select the icon for the drawer, then choose Rename from the Workbench menu. A message then appears asking you for a new name. Select the window that appears, type in a name, then press the RETURN key.

Discarding Drawers

To discard a drawer, drag the icon for the drawer over the Trashcan icon. Putting a drawer in the Trashcan does not free disk space until you select the Trashcan icon, then choose Empty Trash from the Disk menu.

You can also discard a drawer by selecting the icon for the drawer, choosing Discard from the Workbench menu, then selecting Retry in the requester that appears. **WARNING: When you choose Discard to discard a drawer, you cannot get the drawer back.**

Special Drawers: Disks and the Trashcan

Disks and the Trashcan are special kinds of drawers. Disks differ from other drawers in these ways:

- You cannot discard a disk by dragging its icon over the Trashcan icon.
- You cannot move a disk into another drawer.

The Trashcan differs from other drawers in these ways:

- You cannot move the Trashcan into another drawer.
- You cannot duplicate the Trashcan.
- You cannot discard the Trashcan.
- You can discard all tools, projects, and drawers in the Trashcan by selecting the Trashcan icon, then choosing Empty Trash from the Disk menu.

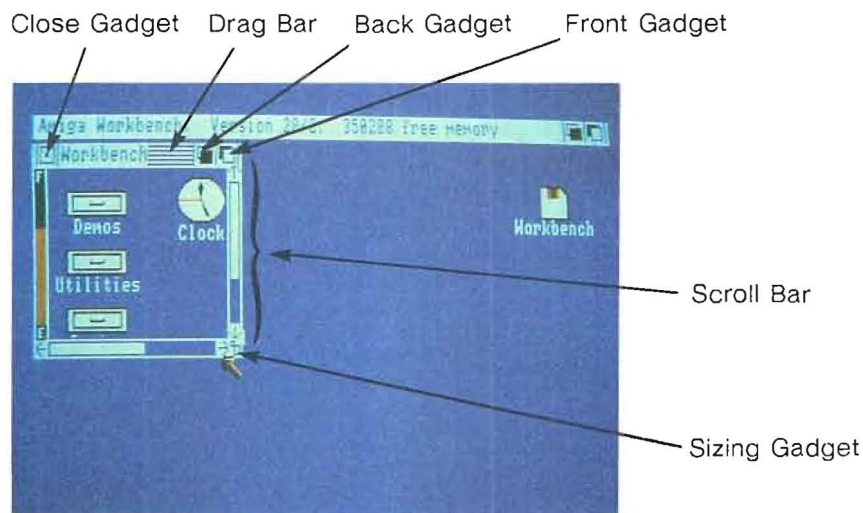
Operations Involving Windows

When you open a tool, project, drawer, disk, or the Trashcan, a window appears on the Workbench. This newly opened window appears in front of any other windows with which it overlaps.

Windows appear within screens. They cannot be moved from one screen to another. While all the windows in a screen can display information, only one window can accept information from you at a time. This window is called the *selected window*.

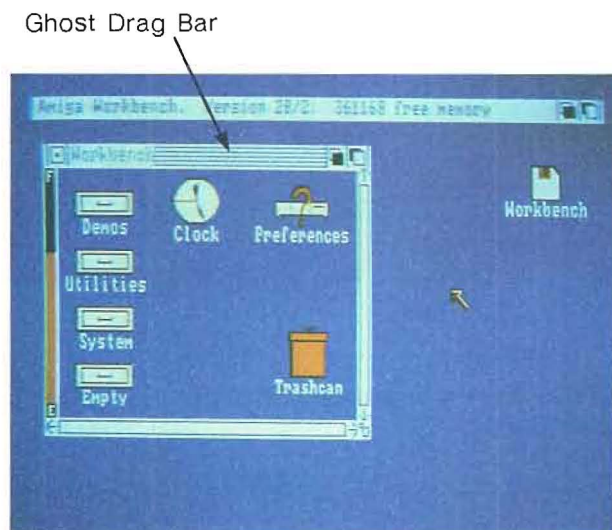
To select a window, point anywhere within the window and click the Selection button.

You change the size of a window, change what's displayed in the window, move the window, and do other things with windows with the help of *gadgets*. You also use gadgets to communicate with tools. Here are some common gadgets found in windows:



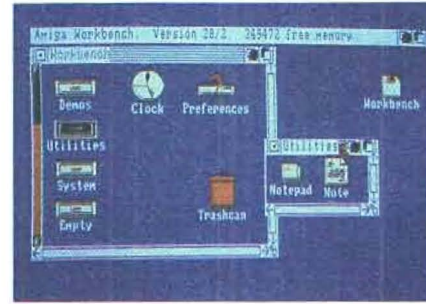
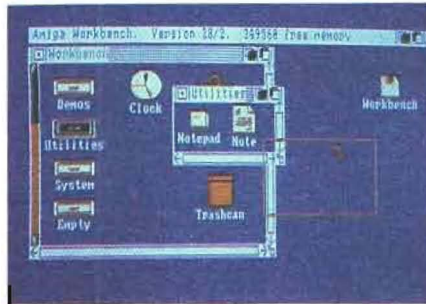
Windows can contain all, some, or none of these gadgets. In addition, windows can contain other gadgets needed for a particular tool.

Like menu items, gadgets in a window can appear as *ghost gadgets*. Here, a ghost Drag Bar indicates that the window is not selected:



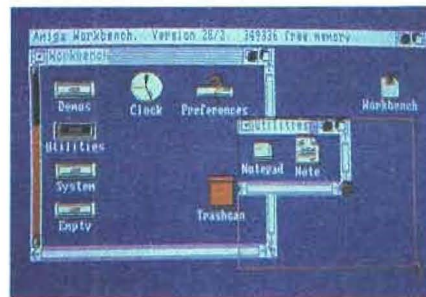
Dragging Windows

You drag a window by pointing anywhere in the window's Title Bar that is not occupied by other gadgets (the *Drag Bar*), holding down the Selection button, and moving the mouse:

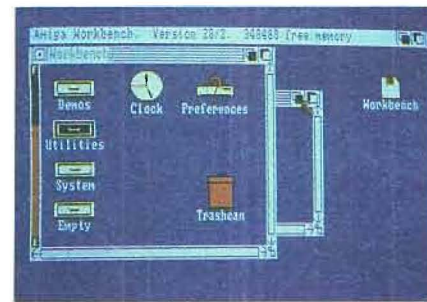
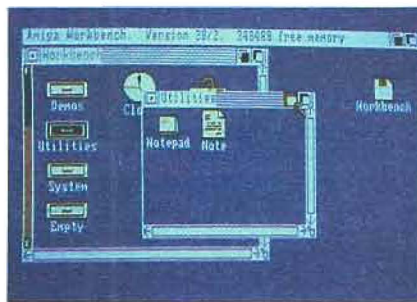
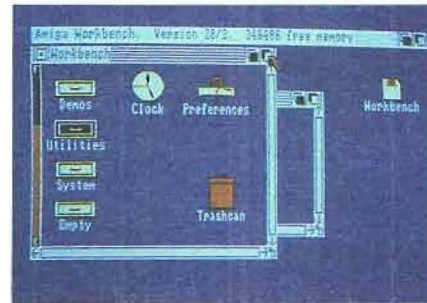
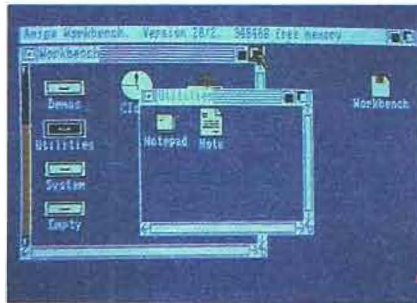


Sizing Windows

To change the size of a window, you drag its *Sizing Gadget*:

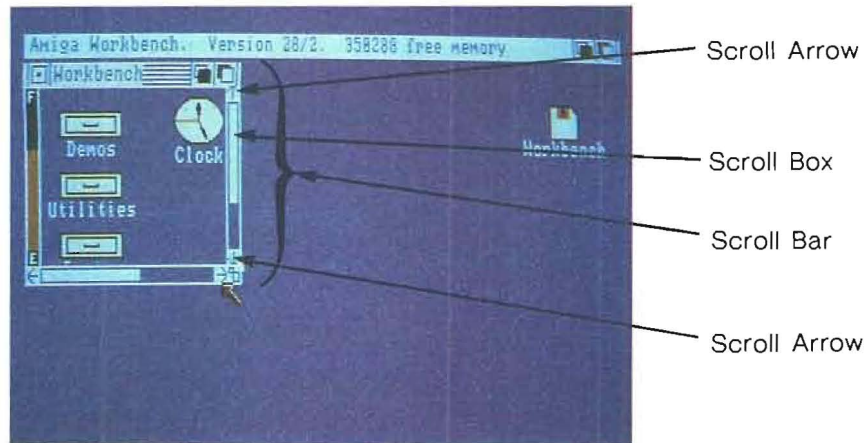


Note that some windows have a maximum size that is smaller than the screen in which they reside.

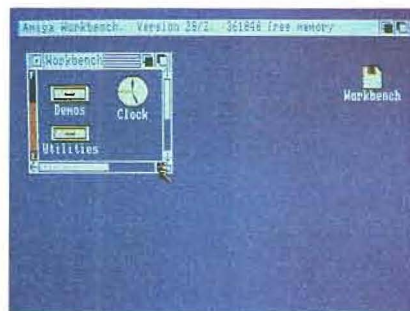


Scrolling the Contents of a Window

For many windows, you can't display everything that can appear within the window at once. Because of this, windows often have *Scroll Bars* that let you move what appears in the window:

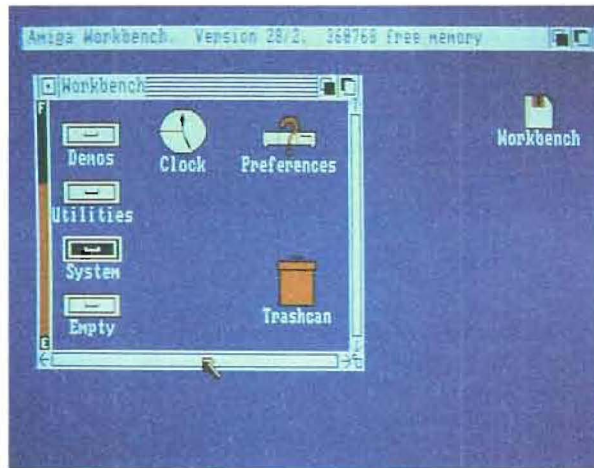


You can move half a window at a time by selecting a *Scroll Arrow* at either end of the Scroll Bar:



Pressing the Shift Key while selecting a Scroll Arrow moves the window one pixel.

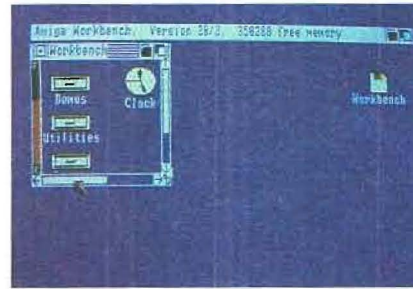
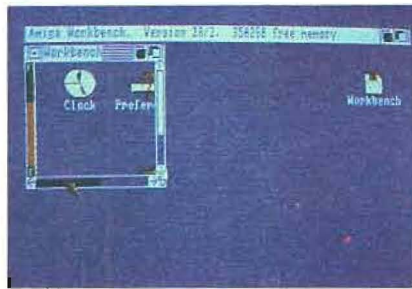
Scroll Boxes change size according to how much can appear in a window. If the window is as wide as what can appear, the Scroll Box in the horizontal Scroll Bar fills the entire space between the Scroll Arrows:



If, for example, only half of what can appear is within the window, the Scroll Box fills only half the space between the Scroll Arrows. The position of the Scroll Box indicates what part you're seeing:



To move what appears in a window, you can drag the Scroll Box:



Selecting the space to either side of the Scroll Box causes the box—and the window—to move in that direction.

Closing Windows

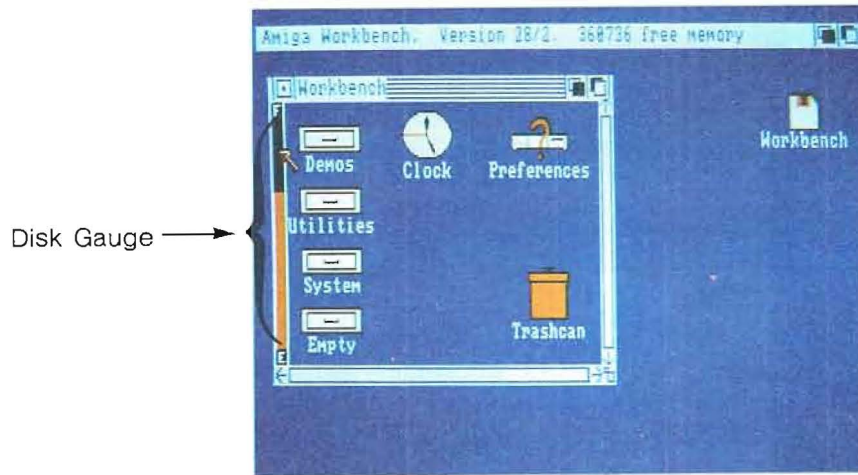
To close a window, select the *Close Gadget*:



You can also close a window for a drawer by selecting its icon, then choosing Close from the Workbench menu.

Disk Gauges

When you open a disk, the window that appears has a *disk gauge* along its left edge:



This gauge shows how full the disk is. The closer the colored center bar is to the top, the less free storage space there is on the disk. If the disk is completely full, the colored bar fills the entire space between the "E" and "F" marks.

To free disk space, move tools, projects, or drawers to the Trashcan, select the Trashcan icon, then choose Empty Trash from the Disk menu.

Operations Involving Screens

As noted earlier, screens are areas of the display with different video attributes. When a window is opened for a tool, it appears in a screen whose video attributes are appropriate for it.

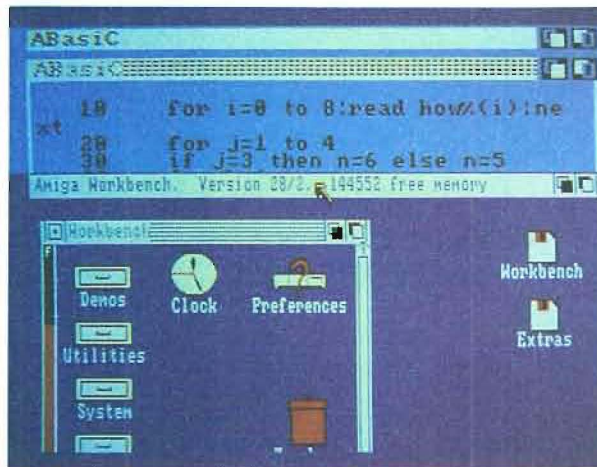
Screens are always as wide as the display, and are no larger than the display. Although the height of a screen is fixed, part of a screen can be off the display:



Screens, like windows, can contain gadgets. Note that a window within the screen can cover the screen's gadgets. If this happens, you must drag or resize the window to reveal the gadgets underneath.

Dragging Screens

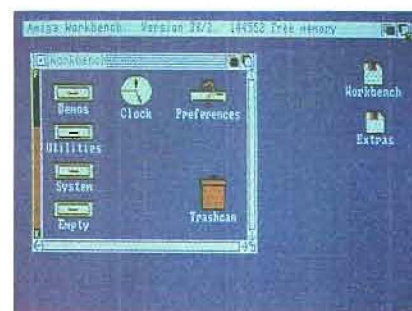
To drag a screen, point anywhere in the screen's Title Bar that is not occupied by other gadgets (the screen's *Drag Bar*), hold down the Selection button, then move the mouse:



You can drag a screen down so that part of it is off the bottom of the display. Note that you cannot drag a screen up so that the bottom of the screen is above the bottom of the display.

Moving Screens in Front of Other Screens

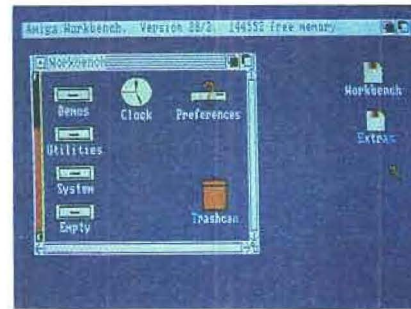
To move a screen in front of other, overlapping screens, select the screen's Front Gadget:



For the Workbench screen, there is a selection shortcut you can use to move it to the front: while holding down the left Amiga key, press the N key.

Pushing Screens Behind Other Screens

To move a screen behind other, overlapping screens, select the screen's Back Gadget:

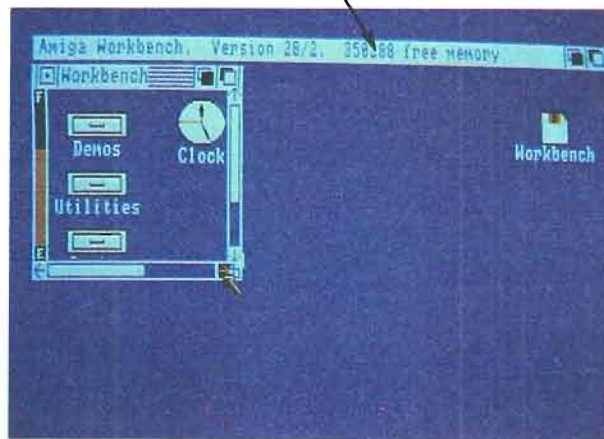


For the Workbench screen, there is a selection shortcut you can use to push it to the back: while holding down the left Amiga key, press the M key.

The Memory Meter

At the top of the Workbench screen is a *memory meter*:

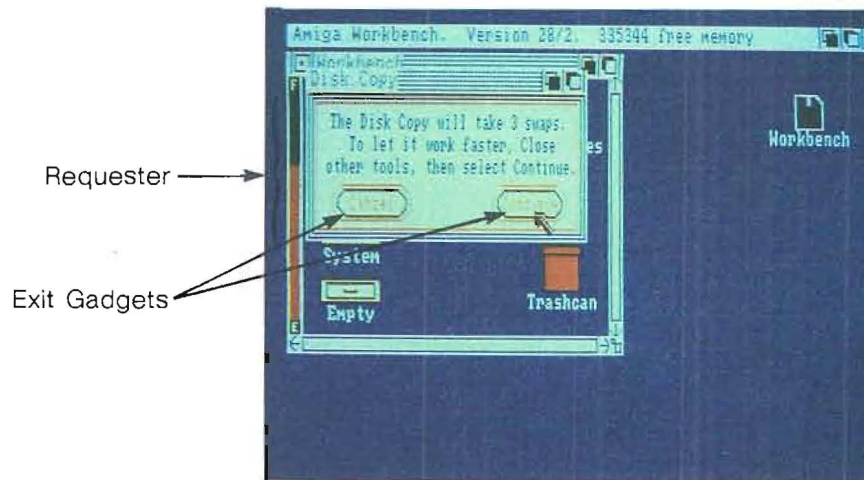
Memory Meter



The meter shows the amount of free *RAM* (*random-access memory*) available to you.

Operations Involving Requesters

A *requester* is an area within a window that a tool uses to communicate with you. Here is an example of a requester:



To respond to a requester, you use the gadget or gadgets it provides. Among the gadgets, there are always one or more *exit gadgets* that you select to close the requester. In many requesters, the “OK” gadget is an exit gadget. Many requesters also have a “Cancel” gadget you select if for any reason you don’t want to perform an action.

Alerts are messages the Amiga provides if there is something seriously wrong with your Amiga or with the tools you’re using. Alerts are hard to ignore: they appear in boxes with flashing red borders. At the top of alerts are the words “Software Failure” or “Not enough memory.”

If you get an alert, jot the number at the bottom of the box on a piece of paper if you can; it will help service people to diagnose the problem.

Operations Involving Disks

Initializing Disks

To use a new disk with the Amiga, it must be *initialized*. If you copy a disk, the new disk is initialized as it receives the copy. To initialize a disk without

making a copy, insert the disk in a disk drive, select the disk icon that appears on the Workbench, then choose Initialize from the Disk menu.

Two warnings:

Initializing a disk destroys any previous information stored on a disk.

Before a disk is completely initialized, the disk drive light will go out, then, after a brief period—from one to ten seconds—it will go on again. Wait for the light to go out a second time before removing the disk. Failure to do so may ruin the disk.

Duplicating Disks

To duplicate a disk, select the icon for the disk, then choose Duplicate from the Workbench menu. Note that when you choose Duplicate, the Amiga makes use of only one disk drive even if there are two or more drives.

Copying Disks

To copy a disk, drag its icon over the icon for a disk that will receive the copy. If you have more than one disk drive, a requester will ask you to insert the disk you want to copy (the *source disk*) into one of the drives, and the disk to receive the copy (the *destination disk*) into another. (Note that “drive 0” referred to in the requester is the internal drive. “Drive 1” is the external drive.)

Two warnings:

Copying a disk destroys any previous information stored on the disk that receives the copy.

If, when you copy a disk, you insert the destination disk in place of the source disk, you will not get a message telling you that you’ve inserted the wrong disk. Be sure to insert the correct disk.

Moving a Tool, Project, or Drawer to a New Disk

To move a copy of a tool, project, or drawer to a new disk, open the disk you want to move it to, then drag the icon into the window for the disk.

Renaming Disks

To rename a disk, select the icon for the disk, then choose Rename from the Workbench menu. A message then appears asking you for a new name. Select the window that appears, type in a name, then press the RETURN key.

Resetting the Workbench

Resetting the Workbench means to set it up again. When you do, you start again with only the Workbench, and the Amiga's memory is cleared. If a tool malfunctions, you may be forced to reset before you can resume work. To reset the Workbench, hold down the CTRL key and both Amiga keys at the same time for at least half a second, then release the keys.

WARNING: Always make sure the disk drive lights are off before resetting the Workbench.

Other Workbench Operations

There are five other tasks you perform on the Workbench. You choose each task—straightening up the Workbench icons, displaying the last error message, *redrawing* the display, saving the positions of icons and windows, and showing the internal version number of the Workbench—from the Special menu for the Workbench.

Cleanup

If a drawer is open and the icon you selected to open the drawer is currently selected, choosing Cleanup straightens up icons in the drawer.

Last Error

Choosing Last Error from the Special menu displays the last message that appeared in the Title Bar for the Workbench. Messages that appear in the Title Bar normally disappear as soon as you select something on the Workbench. (For explanations of error numbers that appear in the Title Bar, see Appendix B, "AmigaDOS Messages.")

Redraw

Choosing Redraw redraws some or all of what appears in the Workbench screen. Should a tool malfunction and disturb what appears in the Workbench screen, choosing Redraw may restore the screen.

Snapshot

Choosing Snapshot saves on disk the positions of currently selected icons. It also saves the sizes and the positions of windows that appear when you open any of the disk or drawer icons that are selected. (Note, however, that the positions of unselected icons within those windows are not saved.)

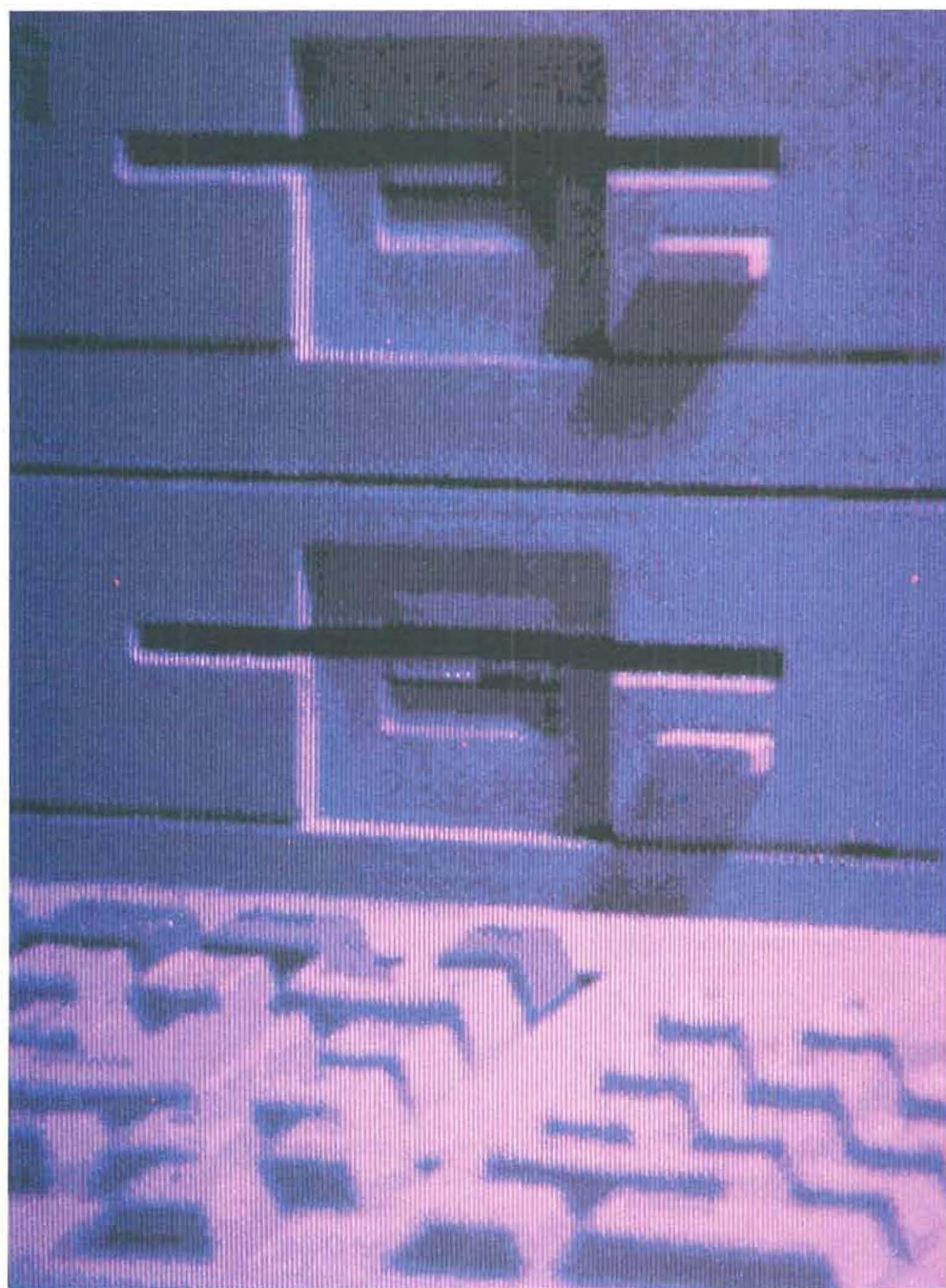
You can take a snapshot of more than one icon at a time by using Extended Selection.

Version

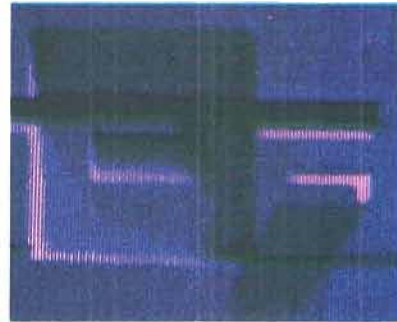
Choose Version to display the internal version number of the Workbench in the Workbench Title Bar. This version number is important only for software developers and support personnel.

Workbench Tools

For information about Preferences, the tool you use to change many of the Amiga's settings, see Chapter 7. To learn about the *Clock*, the *Notepad*, the *Calculator*, and the *Icon Editor*, see Appendix A, "Workbench Tools."



Adding to the Amiga



There are many ways you can add to your Amiga. You can make it more powerful by adding memory or an extra disk drive. Tools for business and entertainment let you use your Amiga in new and exciting ways. To print your projects, you can choose from several printers, including color printers.

In this chapter, you'll get a quick look at some currently available add-ons. Complete instructions for installing and using these add-ons are included with the add-ons. For more information, and for many add-ons not described here, see your Amiga dealer.

Precautions for Add-Ons

When attaching any add-on, use only a cable that is specifically designed for the Amiga. Using a cable that is not properly wired for the Amiga may damage the add-on. You can obtain cables designed for the Amiga from your Amiga dealer. If you wish to adapt other cables for use with the Amiga, see Chapter 7 for information about the proper connections.

Before you attach a cable to any of the connectors on the back of the main unit, turn off the Amiga. Attaching a cable when the Amiga is turned on may reset the Amiga. (This precaution does not apply to the connectors labeled “1” and “2” on the right side of the main unit; you can switch add-ons you attach to these connectors at any time.)

When using cables to attach any add-ons, including printers, be sure that the cables are shielded. Using unshielded cables can cause interference to radio and television reception. See Chapter 7 for more information about how to prevent and correct interference.

Adding Memory to the Amiga

With the *Amiga Memory Expansion Cartridge*, you can easily add an additional 256K of random-access memory to your Amiga. The cartridge slides into the front of the Amiga and takes only seconds to install. With the additional memory, you can:

- open additional tools and switch quickly between them.
- use tools that take advantage of extra memory. Many tools work faster when there is more memory available.
- use tools that require more than 256K of memory.

Adding a Disk Drive to the Amiga

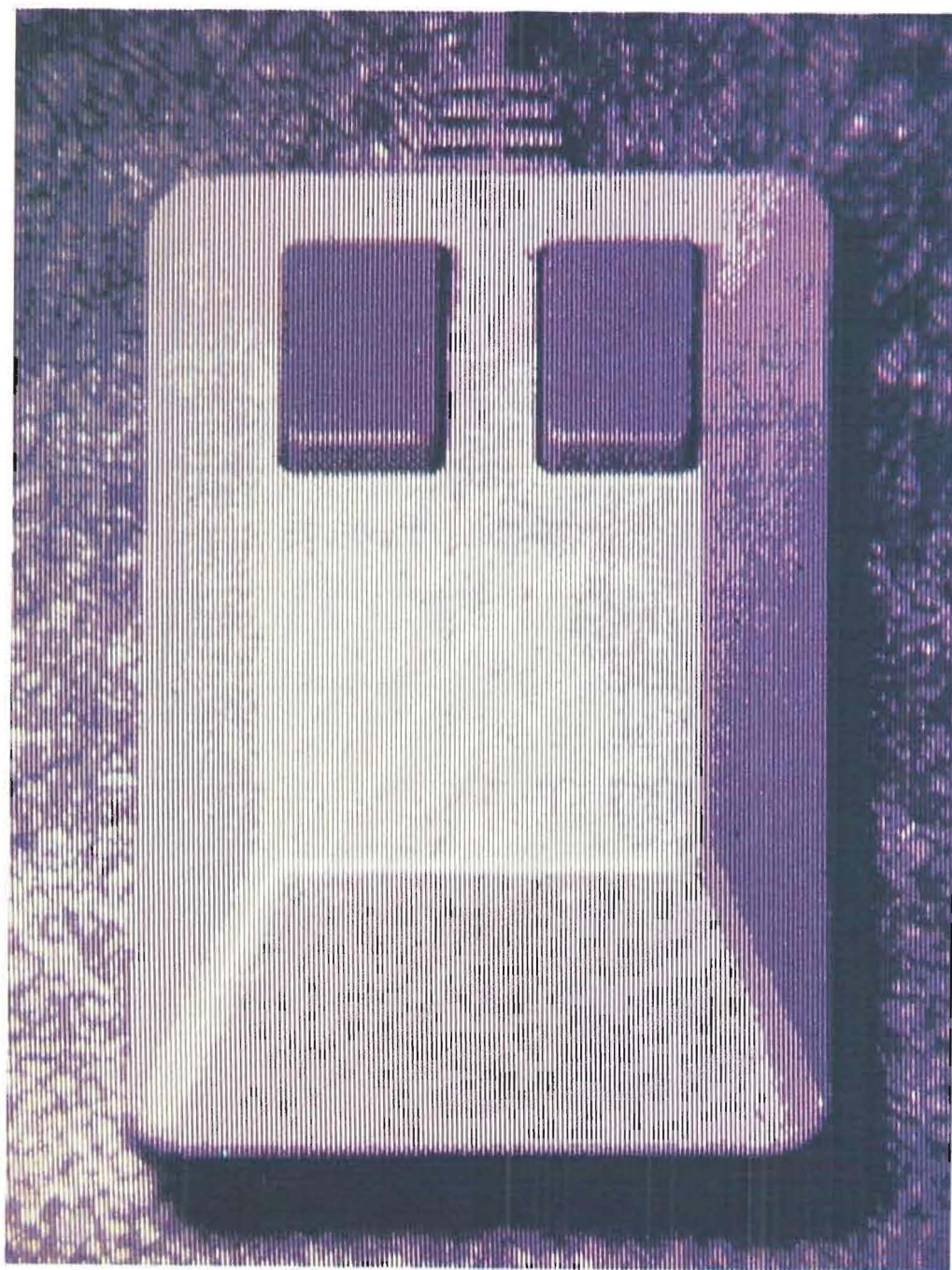
The *Amiga External 3.5 Disk Drive* is identical in storage capacity and performance to the disk drive built into the Amiga. To attach this drive, you simply plug it into the external disk connector on the back of the Amiga. A second disk drive makes it easier and faster to perform many operations, such as copying disks.

Printers for the Amiga

There are five types of printers you can use with an Amiga:

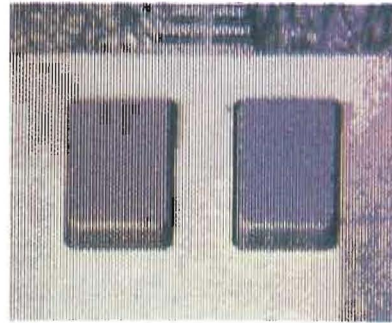
- the Epson® FX-80™ and RX-80™ and the CBM® MPS1000 dot-matrix printers. With these printers, you can produce both text and monochrome graphics.
- the Alphacom® Alphapro 101™, Brother® HR-15XL, Diablo® Advantage D25, Diablo® 630, and Qume® LetterPro 20™ letter-quality printers. These print text identical to that produced by high-quality typewriters. They are, however, slower than most dot-matrix printers and cannot print graphics.
- the Okimate 20™ and Epson® JX-80™ color printers. To use the Okimate 20 with the Amiga, you also need an Okidata “Plug ’n Print” cartridge designed to connect the Okimate 20 to the parallel port of an IBM® PC. The Okimate 20 and the Epson JX-80 can print color images from the Amiga, including paintings you create with Graphicraft™.
- the Diablo® C-150 color printer. This printer uses advanced ink-jet technology to produce high-quality color images.
- Hewlett-Packard LaserJet™ and LaserJet PLUS™ laser printers.

You use the Preferences tool to tell the Amiga which printer you’re using and to change a number of settings that affect printers. To learn about Preferences, see Chapter 7.



Chapter 6

Caring for the Amiga



Your Amiga needs very little care to keep it working at its best. Observe the precautions in this chapter to keep your Amiga in top shape.

Precautions

Keep the Amiga dry. Keep liquids away from the Amiga as you work. An accidental spill can seriously damage the Amiga.

Keep the Amiga out of direct sunlight. If the case gets too hot, the Amiga won't work reliably. Moreover, temperatures above 140 degrees Fahrenheit (60 degrees Celsius) can damage the Amiga's internal components. Keep it cool.

Keep connectors and the ends of cables clean. Food, especially sticky food, is the worst offender. Any substance that adheres to connectors or the ends of cables can prevent a good electrical connection or, worse, damage the connector.

Keep magnets away from the monitor. Although magnets won't damage the monitor, they can distort the video display. In addition to more obvious magnets, beware of magnets in telephones, loudspeakers, and electric motors. (Note that magnets CAN damage information on disks. Be sure to read "Taking Care of Disks" at the end of this chapter.)

Don't plug anything other than the keyboard into the keyboard connector. Plugging in anything else may damage the Amiga.

Don't put more than 40 pounds (18 kilograms) on top of the main unit. Most monitors weigh less than this, but there are televisions that weigh more.

Don't open the case. If your Amiga needs service, bring it to an Amiga dealer or an approved Amiga Service Center. Opening the case will void the warranty on your Amiga.

Use the mouse on a clean surface. The ball on the bottom of the mouse must be clean to work properly. If the mouse behaves erratically, it may need cleaning. The next section tells how to clean your mouse.

Cleaning the Mouse

To keep the mouse working properly, give it an occasional cleaning. To clean the mouse, you'll need:

- a soft, dry, lint-free cloth
- alcohol or head cleaning fluid for tape recorders
- cotton swabs

Cleaning the mouse takes just a couple of minutes. Here's how you do it:



Turn the mouse upside down with its cable toward you. Hold the mouse in both hands and put your thumbs under the two arrows on either side of the ball:





With your thumbs, push firmly in the direction of the arrows to open the cover for the mouse ball. With the mouse upside down, lift off the cover with a fingernail:



Put your hand over the opening, turn the mouse upside down, and catch the ball:



In the opening, you'll see three small metal rollers. Moisten a cotton swab with alcohol or head cleaning fluid and gently swab the surface of each roller. Turn each roller as you swab to clean it all the way around.



With the cloth, wipe off the mouse ball. (Don't use any liquid when cleaning the mouse ball.) When you're done, blow gently into the opening to remove any dust, replace the ball, and slide the cover for the ball back into place.

Taking Care of Disks

To protect the information on your disks, observe these precautions:

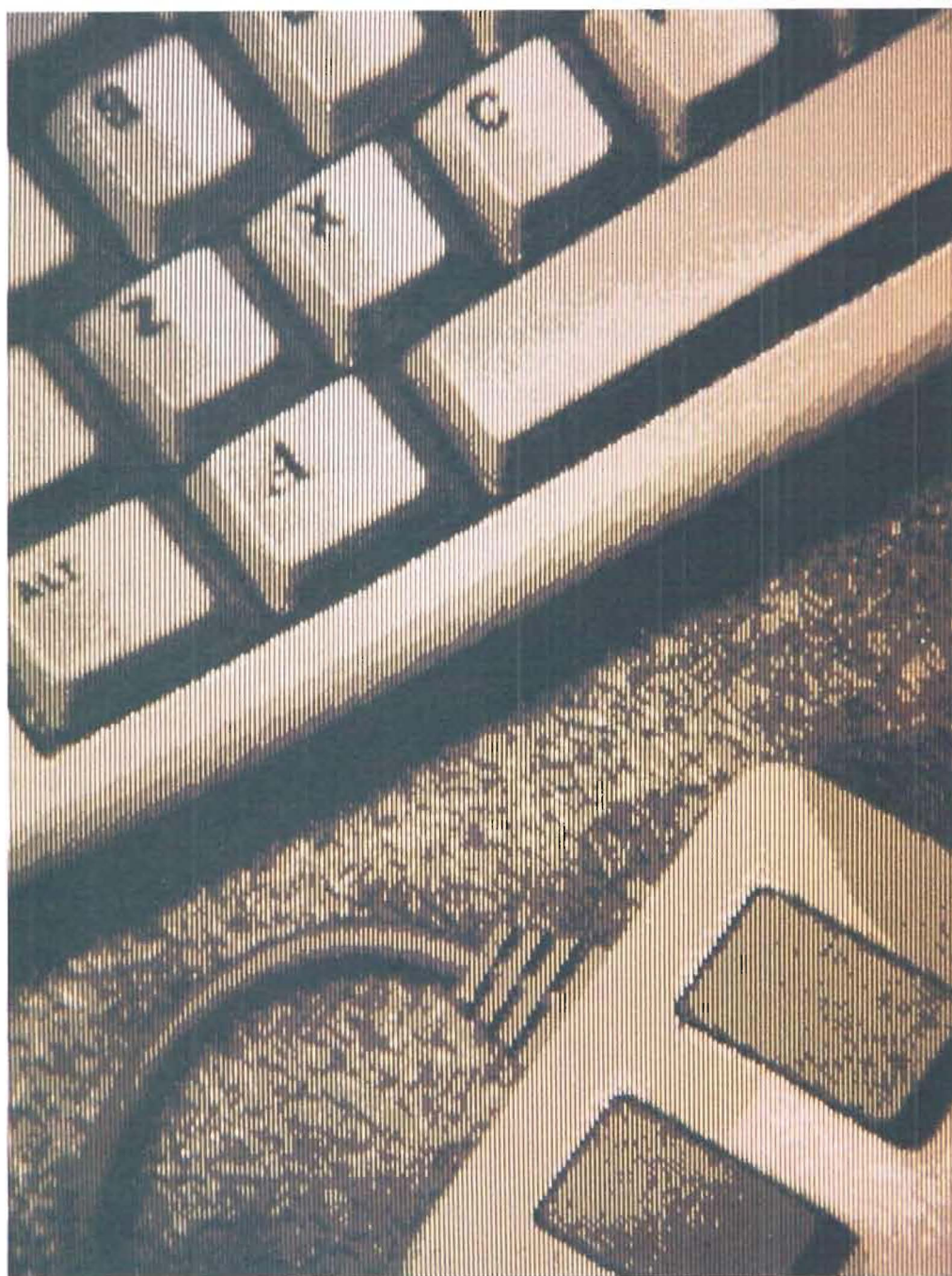
Never remove a disk from a disk drive when the disk drive light is on. The disk drive light tells you that the Amiga is using a disk. Taking a disk out too soon may ruin the information on the disk.

Keep disks away from magnets. Microdisks, like audio tapes, store information magnetically. Magnets can ruin the information on a disk. In addition to more obvious magnets, beware of magnets in telephones, loudspeakers, and electric motors.

Keep disks dry and away from extreme heat or cold. Microdisks are comfortable at about the same temperatures you are. Don't leave disks in direct sunlight, near heat sources, or in cars parked in the sun.

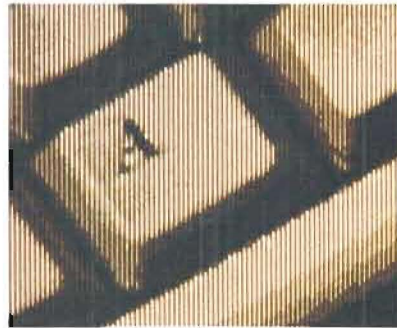
Don't touch the surface of the disk. A microdisk's metal cover closes automatically whenever you remove the disk from a disk drive. Don't touch the surface of the disk underneath the cover.

Make copies of important disks. The best insurance for the information on a disk is to make a copy of the disk and keep the copy in a safe place. Make a habit of copying an important disk each time you finish working with it.



Chapter 7

Reference

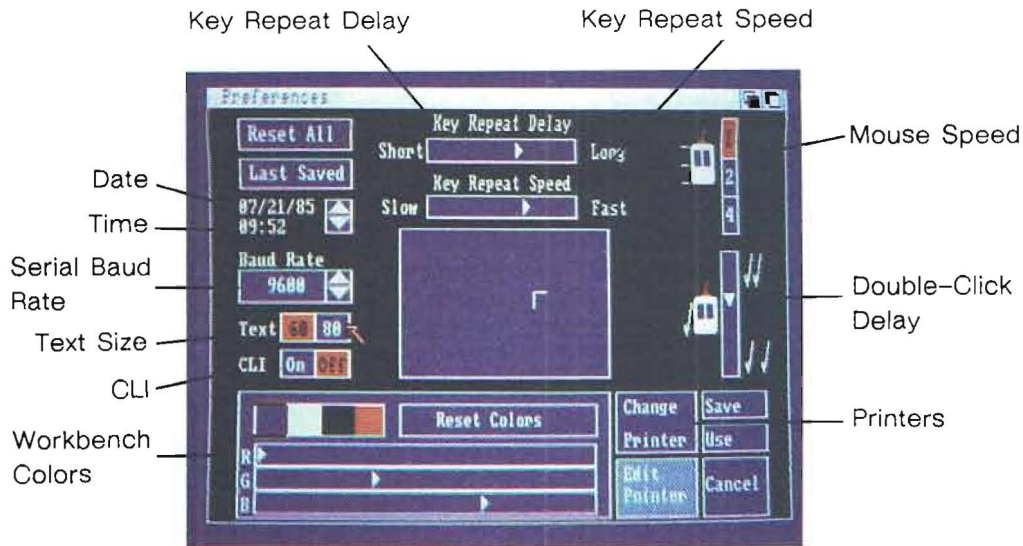


In this chapter, you'll find:

- a complete description of Preferences, the tool you use to change many of the settings of the Amiga
- descriptions of the Amiga input/output connectors
- information about radio and television interference
- specifications for the Amiga

Preferences

Preferences is a tool that lets you see and change many of the settings of your Amiga. These are the settings you can change with Preferences:



Date and Time

To change the date or time, first select the digit you want to change by pointing to it, then clicking the Selection button. With a digit selected, you can:

- select the up arrow to increase the selected digit by one
- select the down arrow to decrease the selected digit by one

The leftmost digits of the date are the number of the month, the middle digits are the day of the month, and the rightmost digits are the last two digits of the year. The time is shown using a 24-hour clock.

Note that if any of the numbers is as large as it can be, increasing it increases the value for the next larger interval of time. For example, if the value for the hours is 11 and the value for the minutes is 59, increasing the digit 9 for the minutes leaves you at 12:00. Conversely, decreasing a value that is as small as it can be decreases the value for the next smaller interval of time.

Key Repeat Speed

To make keys on the keyboard repeat more quickly when you hold down a key, drag the arrow on the slider labeled Key Repeat Speed to the right. To slow down the rate at which keys repeat, drag the arrow to the left.

Key Repeat Delay

When you hold down a key that repeats, there is a delay before the key begins repeating. To increase this delay, drag the arrow on the slider labeled Key Repeat Delay to the right. To decrease the delay, drag the arrow to the left.

Mouse Speed

The three settings for *mouse speed* let you change how far the Pointer moves when you move the mouse. The settings 1, 2, and 4 are the number of inches you move the mouse to move the Pointer roughly a third of the way across the display. The larger the number, the more room you need for the mouse.

Double-Click Delay

You use the *Double-Click Slider* to set the maximum length of time between the two clicks of a double-click. Drag the arrow down to increase the maximum length of time. Drag the arrow up to decrease the maximum time.


Text Size

To make the best use of your monitor, you can choose the size of the characters that appear on the display. Most NTSC monitors and televisions can show 60 characters clearly on each line of the display, while RGB monitors can display 80 characters clearly. If you have an NTSC monitor or television connected to the Amiga, select the gadget labeled 60 to the right of the word Text. If you have an RGB monitor connected to the Amiga, select the gadget labeled 80.

CLI

In addition to the Workbench, the Amiga includes another user interface, the Command Line Interface (CLI). To make an icon for the CLI appear in the System drawer on the Workbench, select the ON gadget immediately to the right of “CLI” on the Preferences screen. (To learn about the CLI, see the *AmigaDOS User's Manual*.)

Display Centering

To center the image on a video display, move the Pointer into the corner of the  symbol that appears in the *Display Centering Gadget*, hold down the Selection button, then move the mouse to change the position of the image.

Baud Rate

If you have an add-on connected to the serial connector of your Amiga, you can change the *baud rate*—the rate at which information is transferred through the serial connector—by selecting the arrows below and to the right of the words Baud Rate. The current baud rate is shown to the left of the arrows. Select the up arrow to increase the baud rate. Select the down arrow to decrease the rate.

Workbench Colors

With Preferences, you can change any of the four colors displayed by the Workbench. Start by selecting the color you want to change from the four colors shown. Below these colors are three sliders labeled R, G, and B. These letters stand for red, green, and blue, the colors that the Amiga combines to create the colors it displays. To modify the color you've selected, you change the amount of red, green, and blue in the color by dragging the arrows along the sliders.

Try dragging the arrows in the sliders and watch how the color changes. With a bit of practice, you'll be able to get the colors you want.

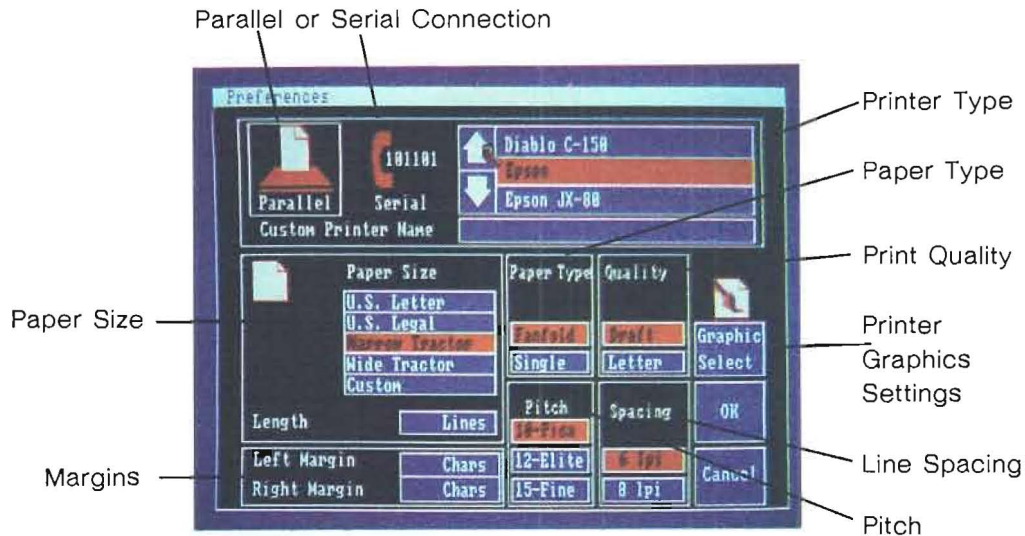
To get back the colors you had before you opened Preferences, select the gadget labeled Reset Colors. (To get back the original Workbench colors—the ones displayed when you inserted the original Workbench disk that came with the Amiga—select the Reset All gadget described below.)

Changing the Pointer

To learn how to change the Pointer with Preferences, see Appendix C, "Changing the Pointer."

Printers

If you've attached a printer to the Amiga, you need to tell the Amiga the type of printer you've attached. You do this by selecting Change Printer. When you do, the *Change Printer Screen* appears:



In this screen, you can select:

- **Printer Type.** The names of printers supported by the Amiga appear in the upper right of the screen. To indicate the printer you're using, select either the up arrow or down arrow until the name of your printer is highlighted.

Makers of other printers may provide a file on disk that allows you to use their printers with the Amiga. If the instructions for your printer state that you are to indicate a printer file, select Custom from the list of printers. Next, select the gadget immediately to the right of the words Custom Printer Name. Finally, type in the name of the file indicated in the instructions.

If you want to attach a printer that is not supported by the Amiga and you do not have a file for it, select Custom from the list of printers, then enter Generic in the Custom Printer Name gadget. For many printers, this will allow you to print plain text, but not graphics or extra type styles such as italics.

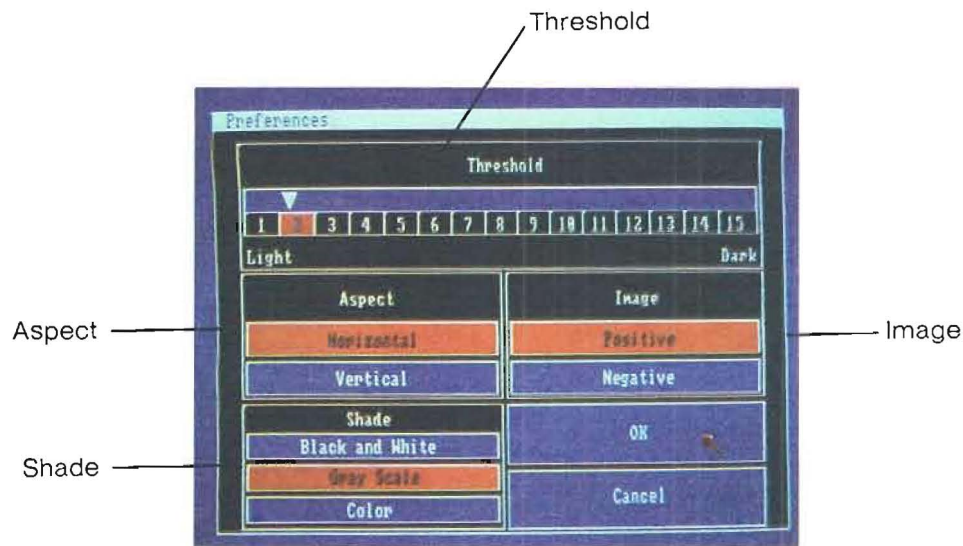
- **Parallel or Serial Connection.** If your printer is attached to the parallel connector on the Amiga, select the gadget labeled Parallel at the upper left of the screen. If it's attached to the serial connector, select the gadget labeled Serial.
- **Paper Size.** There are four preset sizes you can select from: US Letter (8-1/2 inches wide, 11 inches tall), US Legal (8-1/2 inches wide, 14 inches tall), Narrow Tractor (9-1/2 inches wide, 11 inches tall), and Wide Tractor (14-7/8 inches wide, 11 inches tall).

You can use other sizes of paper by selecting Custom. When you select Custom, you must also specify the number of lines that fit on the size of the paper you're using. To do this, select the gadget labeled Length just below the paper sizes, then type in the number of lines.

- **Left and Right Margins.** You indicate the width of these margins by specifying numbers of characters from the left-hand edge of the paper. To specify the width of the left margin, select the gadget to the right of the words Left Margin, then type in the width, in characters, of the left margin. To specify the width of the right margin, select the gadget to the right of the words Right Margin, then type in the width, in characters, for the distance from the left-hand edge of the paper to where the right margin begins.
- **Paper Type.** Select Fanfold if you're using continuous-feed paper. Select Single if you're printing on individual sheets.
- **Quality.** For faster but lower-quality printing, select Draft. For higher-quality printing, select Letter.
- **Pitch.** You use this to select the size of the characters that are printed. You can select from among 10 pitch ("pica"), 12 pitch ("elite"), and 15 pitch ("fine").
- **Spacing.** This lets you select how closely lines are printed on the page. Select either 6 or 8 lines per inch ("lpi").

Note: Many tools use the Length, Spacing, Left Margin, and Right Margin settings rather than the Paper Size setting to determine how large an image to print. For these tools, check to see whether what you print will fit on the paper by using the following formulas: $\text{Length} \div \text{Spacing}$ must be smaller than the length of the paper, in inches; $((\text{Right Margin Setting} - \text{Left Margin Setting}) + 1) \div \text{Pitch Setting}$ must be smaller than the width of the paper, in inches.

There is an additional gadget in this screen labeled Graphic Select. Selecting this gadget opens the *Printer Graphics* screen:



You use this screen to select different ways to print images:

- **Shade** lets you select color printing, gray-scale printing (where colors are represented by different shades of gray), or black-and-white printing (where some colors are printed as pure black, and others as pure white. Whether a color is printed as black or white is determined by the *threshold value* described below.)
- **Aspect** lets you select whether to print normally or “sideways” on the page. Select Horizontal to print “normally,” so that what appears on the top of the display appears along the top edge of the printer paper. Select Vertical to print what appears on the top of the display along the side of the printer paper.
- **Image** lets you print an image as it appears on the display (by selecting Positive) or “reversed” (by selecting Negative). This setting affects only black-and-white and gray scale printing.
- **Threshold**, for black-and-white printing, lets you determine which colors are printed as white, and which as black. You change the Threshold setting by dragging the arrow in the slider below the label Threshold. When the setting for Image is Positive and the Threshold setting is 2, only the darkest color on the display is printed as black, while the rest is white. Increasing the value of the Threshold setting causes more colors to be printed as black. As you increase the setting, the lighter colors are printed as black.

When the setting for Image is Negative, the higher the Threshold setting, the lighter are the colors that are printed as black.

Note that not all these choices apply to all printers. For example, letter-quality printers that use a “daisy wheel” printhead can only produce one quality of printing. To find out what selections apply to your printer, see the documentation provided with the printer.

When you’re done making selections for your printer, select OK to confirm your selections or Cancel to cancel them. Selecting either OK or Cancel returns you to the Change Printer Screen.

Getting Back Preferences

If you'd like to get back the Preferences settings that came with the original Workbench disk, select **Reset All**. If you'd like to get back the last Preferences settings you saved, select **Last Saved**.

Using and Saving Preferences

When you're done with Preferences, select one of the gadgets at the lower right of the window. Select **Save** if you want your settings to take effect now and each time you start up the Workbench with the Workbench disk you're currently using. Selecting **Save** saves your settings on the Workbench disk. Select **Use** if you want your settings to take effect now, but you don't want to save the settings on the Workbench disk for future use. If you change the settings, then decide you don't want them to take effect, select **Cancel**.

Because each Workbench disk keeps its own Preferences settings, different people can save their own settings on separate Workbench disks. To get back your settings, just set up the Workbench using the disk on which you've saved them.

Input/Output Connectors

This section lists pin assignments for several input/output connectors on the Amiga. The information in this section is highly technical and is intended only for those expert in connecting external devices to computers. You do not need this information if you use a cable specifically designed for use with the Amiga and the add-on you want to connect.

For information about connectors not described in this section, see the *Amiga Hardware Manual*.

If you attach add-ons with cables other than those designed for use with the Amiga, note: **some pins on Amiga connectors provide power outputs and non-standard signals. Attempting to use cables not wired specifically for the Amiga may cause damage to the Amiga or to the equipment you connect.** The descriptions below include specific warnings for each connector. For more information about connecting add-ons, consult your Amiga dealer.

In the descriptions that follow, an asterisk (*) at the end of a signal name indicates a signal that is active low.

Serial Connector

In the following table, the second column from the left gives the Amiga pin assignments. The third and fourth columns from the left give pin assignments for other commonly used connections; the information in these two columns is given for comparison only.

WARNING: Pins 14, 21, and 23 on the Amiga serial connector are used for external power. Connect these pins **ONLY** if power from them is required by the external device. The table lists the power provided by each of these pins.

Pin	Amiga	RS232	HAYES®	Description
1	GND	GND		FRAME GROUND
2	TXD	TXD	TXD	TRANSMIT DATA
3	RXD	RXD	RXD	RECEIVE DATA
4	RTS	RTS		REQUEST TO SEND
5	CTS	CTS	CTS	CLEAR TO SEND
6	DSR	DSR	DSR	DATA SET READY
7	GND	GND	GND	SYSTEM GROUND
8	CD	CD	CD	CARRIER DETECT
9				
10				
11				
12		S.SD	SI	
13		S.CTS		
14	-5V	S.TXD		-5 VOLT POWER (50 mA)
15	AUDO	TXC		AUDIO OUT OF AMIGA
16	AUDI	S.RXD		AUDIO INTO AMIGA
17	EB	RXC		BUFFERED PORT CLOCK
18	INT2*			INTERRUPT LINE TO AMIGA
19		S.RTS		
20	DTR	DTR	DTR	DATA TERMINAL READY
21	+5V	SQD		+5 VOLT POWER (100 mA)
22		RI	RI	
23	+12V	SS		+12 VOLT POWER (50 mA)
24	C2*	TXC1		3.58 MHZ CLOCK
25	RESB*			BUFFERED SYSTEM RESET

31 - 15
33 - 16
36 - 17
19 - 18

Parallel Connector

WARNING: Pin 23 on the Amiga parallel connector supplies +5 volts of power. Connect this pin **ONLY** if the power from it is required by the external device. **NEVER** connect this pin to an output of an external device or to a signal ground.

Pins 14–22 are for grounding signals. **DO NOT** connect these pins directly to a shield ground.

Pin	Name	Description
1	DRDY*	DATA READY
2	D0	DATA BIT 0 (Least significant bit)
3	D1	DATA BIT 1
4	D2	DATA BIT 2
5	D3	DATA BIT 3
6	D4	DATA BIT 4
7	D5	DATA BIT 5
8	D6	DATA BIT 6
9	D7	DATA BIT 7
10	ACK*	ACKNOWLEDGE
11	BUSY	BUSY
12	POUT	PAPER OUT
13	SEL	SELECT
14	GND	SIGNAL GROUND
15	GND	SIGNAL GROUND
16	GND	SIGNAL GROUND
17	GND	SIGNAL GROUND
18	GND	SIGNAL GROUND
19	GND	SIGNAL GROUND
20	GND	SIGNAL GROUND
21	GND	SIGNAL GROUND
22	GND	SIGNAL GROUND
23	+5V	+5 VOLTS POWER (100 mA)
24		
25	RESET*	RESET

RGB Monitor Connector

WARNING: Pins 21, 22, and 23 on the RGB monitor connector are used for external power. Connect these pins **ONLY** if power from them is required by the external device. The table lists the power provided by each of these pins.

Pin	Name	Description
1	XCLK*	EXTERNAL CLOCK
2	XCLKEN*	EXTERNAL CLOCK ENABLE
3	RED	ANALOG RED
4	GREEN	ANALOG GREEN
5	BLUE	ANALOG BLUE
6	DI	DIGITAL INTENSITY
7	DB	DIGITAL BLUE
8	DG	DIGITAL GREEN
9	DR	DIGITAL RED
10	CSYNC*	COMPOSITE SYNC
11	HSYNC*	HORIZONTAL SYNC
12	VSNC*	VERTICAL SYNC
13	GNDRTN	RETURN FOR XCLKEN*
14	ZD*	ZERO DETECT
15	C1*	CLOCK OUT
16	GND	GROUND
17	GND	GROUND
18	GND	GROUND
19	GND	GROUND
20	GND	GROUND
21	-5V	-5 VOLTS POWER (50 mA)
22	+12V	+12 VOLTS POWER (175 mA)
23	+5V	+5 VOLTS POWER (300 mA)

TV Modulator Connector

WARNING: Pin 7 on the TV modulator connector supplies +12 volts of power. Connect this pin **ONLY** if power from it is required by the external device.

Pin	Name	Description
1		
2	GND	GROUND
3	AUDIO LEFT	LEFT AUDIO CHANNEL
4	COMP VIDEO	COMPOSITE VIDEO OUTPUT
5	GND	GROUND
6		
7	+12V	+12 VOLTS POWER (60 mA)
8	AUDIO RIGHT	RIGHT AUDIO CHANNEL

Mouse/Game Controller Connectors

There are connectors labeled “1” and “2” on the right side of the Amiga. If you use a mouse to control the Workbench, you must attach it to connector 1 (the connector closest to the front of the Amiga). You can attach game controllers to either of the connectors. To use a light pen, you must attach it to connector 1. The following tables describe mouse, game controller, and light pen connections.

WARNING: Pin 7 on each of these connectors supplies +5 volts of power. Connect this pin **ONLY** if power from it is required by the external device.

Connectors 1 and 2: Mouse Connections

Pin	Name	Description
1	MOUSE V	MOUSE VERTICAL
2	MOUSE H	MOUSE HORIZONTAL
3	MOUSE VQ	VERTICAL QUADRATURE
4	MOUSE HQ	HORIZONTAL QUADRATURE
5	MOUSE BUTTON 2	MOUSE BUTTON 2
6	MOUSE BUTTON 1	MOUSE BUTTON 1
7	+5V	+5 VOLTS POWER (125 mA)
8	GND	GROUND
9	MOUSE BUTTON 3	MOUSE BUTTON 3

Connectors 1 and 2: Game Controller

Pin	Name	Description
1	FORWARD*	CONTROLLER FORWARD
2	BACK*	CONTROLLER BACK
3	LEFT*	CONTROLLER LEFT
4	RIGHT*	CONTROLLER RIGHT
5	POT X	HORIZONTAL POTENTIOMETER
6	FIRE*	CONTROLLER FIRE
7	+5V	+5 VOLTS POWER (125 mA)
8	GND	GROUND
9	POT Y	VERTICAL POTENTIOMETER

Connector 1: Light Pen Connections

Pin	Name	Description
1		
2		
3		
4		
5	LIGHT PEN PRESS	LIGHT PEN TOUCHED TO SCREEN
6	LIGHT PEN*	CAPTURE BEAM POSITION
7	+5V	+5 VOLTS POWER (125 mA)
8	GND	GROUND
9		

Radio and Television Interference

Your Amiga generates and uses radio frequency energy. If it not installed and used properly, that is, in strict accordance with the instructions in this manual, it may cause interference to radio and television reception. The Amiga has been certified to comply with the limits for a Class B computing device, pursuant to subpart J of Part 15 of the Federal Communication Commission's rules, which are designed to provide reasonable protection against radio and television interference in a residential installation. If you suspect interference, you can test the Amiga by turning it off and on. If the Amiga does cause interference, try the following:

- Reorient the antenna or AC plug on the radio or television.
- Change the relative positions of the Amiga and the radio or television.
- Move the Amiga farther away from the radio or television.
- Plug either the Amiga or the radio or television into a different outlet so that the Amiga and the radio or television are on different circuits.

Use only shield-grounded cables when connecting peripherals (computer input-output devices, terminals, printers, etc.) to the Amiga. All peripherals must be certified to comply with Class B limits. Operation with non-certified peripherals is likely to result in interference to radio and television reception.

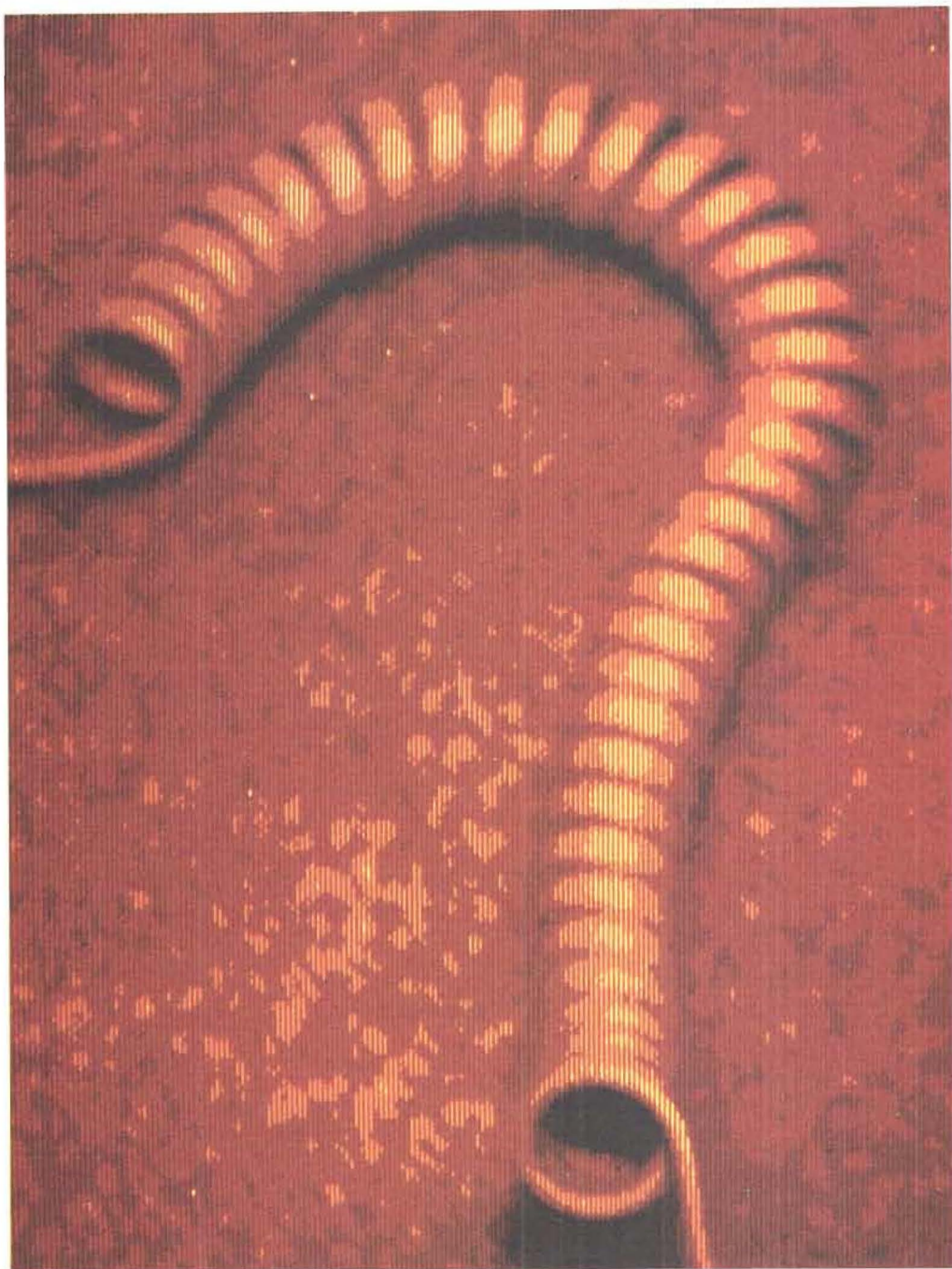
Your house AC wall receptacle must be a three-pronged type (AC ground). If not, contact an electrician to install the proper receptacle. If a multi-connector box is used to connect the computer and peripherals to AC, the ground must be common to all units.

If necessary, consult your Amiga dealer or an experienced radio-television technician for additional suggestions. You may find the following FCC booklet helpful: "How to Identify and Resolve Radio-TV Interference Problems." The booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, stock no. 004-000-00345-4.

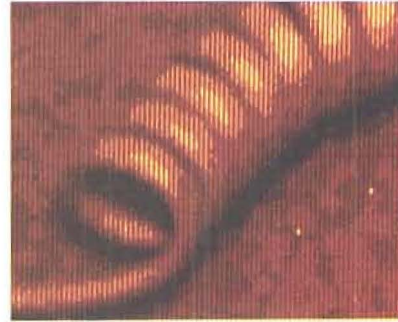
Amiga Specifications

Central Processor	Motorola MC68000
Memory	256K bytes RAM expandable to 512K
Disks	3-1/2 inch double-sided microdisks with 880K bytes formatted storage capacity per disk
Mouse	Mechanical, .13 mm/count (200 counts per inch)

Interfaces	RS-232 serial interface
	Centronics®-compatible parallel interface
	External disk interface
	Mouse/Game controller interface
	Additional game controller interface
	Keyboard interface
	Two audio outputs for stereo sound
	Memory cartridge interface
	Expansion interface
Supported Monitors	RGB, NTSC (composite video), and standard televisions
Power Requirements	99 to 121 volts AC 54 to 66 Hz
Temperature Requirements	For operation: 5 to 45 degrees Celsius (41 to 113 degrees Fahrenheit)
	For storage: -40 to 60 degrees Celsius (-40 to 140 degrees Fahrenheit)
Humidity Requirements	20% to 80% relative humidity, non-condensing
Maximum Weight the Main Unit Can Support	40 pounds (18 kilograms)



Appendices



Appendix A: Workbench Tools

The Workbench disk contains several tools:

- Preferences, the tool you use to change many of the settings of the Amiga. Preferences is described in Chapter 7.
- Demonstrations that show the graphics abilities of the Amiga. You can find these tools in the *Demos drawer* on the Workbench. To start a demonstration, select one of the icons in the Demos drawer, then choose Open from the Workbench menu. To stop a demo, select the Close Gadget in the upper left-hand corner of the demonstration's window.
- The *Clock*, the *Notepad*, the *Calculator*, and the *Icon Editor*. These tools are described below.

The Clock

The Clock tool lets you show the current time. In addition, you can use the Clock as an alarm clock.

Setting the Time

To set the time for the Clock, use the Preferences tool. (To learn about Preferences, see Chapter 7.)

Opening the Clock

To open the Clock, select the Clock icon in the Workbench disk drawer, then choose Open from the Workbench menu. When you do, an analog clock with a second hand appears in a window.

Using the Clock Menus

To choose from the menus described below, you must first select the window in which the Clock appears.

Changing the Clock from Analog to Digital

Choose the type of clock you want (either analog or digital) from the Type menu. The type currently chosen is indicated by a check mark.

Changing the Size and Position of the Clock

To change the size of an analog clock, drag the Sizing Gadget at the lower right-hand corner of the window. (You cannot change the size of a digital clock's window.) To move the Clock to a new location, drag the window by its Drag Bar.

Changing from a 12- to a 24-Hour Clock

You can display either a 12-hour or 24-hour clock by choosing 12 Hour or 24 Hour from the Mode menu. The current setting is indicated by a check mark.

Displaying the Seconds

If you don't want to display the second hand on an analog clock or the digits for the seconds on a digital clock, select the Seconds gadget in the lower left corner of the Clock window. Selecting the Seconds gadget again restores the second hand or the seconds digits.

Setting the Alarm

The items in the Alarm menu let you use the Clock as an alarm clock. The "alarm" is a brief flash on the display (the same flash that appears when an error occurs) accompanied by an equally brief "beep" sound if your Amiga is attached to audio equipment. To set the alarm, choose Set. In the requester that appears, the time is shown using either a 24-hour clock or a 12-hour clock with "AM" or "PM" indicated. To change the hour setting, point to the digits for the hours, click the Selection button, then select either the up arrow (to move the time ahead) or the down arrow (to move the time back). To change the setting for the minutes, point to the digits for the minutes, click the Selection button, then select either the up or down arrow. Selecting AM or PM switches the setting. When the time is

set correctly, select **USE**. If, instead, you want to restore the previous alarm setting, select **CANCEL**.

To turn on the alarm clock, choose **Alarm On** from the **Alarm** menu. To turn it off, choose **Alarm Off**.

NOTE: If you close the **Clock**, the alarm is no longer set.

Closing the Clock

To close the **Clock**, select the **Close** gadget in the upper right-hand corner of the window.

The Notepad

With the **Notepad** tool, you can keep notes or create short documents. You can find the **Notepad** in the **Utilities** drawer on the **Workbench** disk.

Opening the Notepad

You can open the **Notepad** by selecting its icon, then choosing **Open** from the **Workbench** menu. When you do, a window for the **Notepad** appears.

Entering Text

To enter text, select the **Notepad** window if it isn't already selected, then type. When you type, the characters you type appear to the left of the **Text Cursor** (the vertical bar that appears in the window). As you add characters, any characters to the right of the **Text Cursor** move to the right or, if they're at the right edge of the window, down a line. (To see how this works, try adding characters.)

When you're typing and you reach the bottom of the window, the contents of the window are scrolled upward.

Moving the Text Cursor

To move the Text Cursor, point to a place within your note, then click the Selection button. (Note that you cannot move the Text Cursor to a point in the window beyond where you've entered characters.) You can also move the Text Cursor by pressing the cursor keys. Note that when you press the up or down cursor key and you reach the top or bottom of the window, the contents of the window are scrolled.

Changing the Size of the Notepad Window

You can change the size of the Notepad window by dragging the Sizing Gadget at the lower right. When you do, your note is automatically reformatted.

Moving from Page to Page

There are two additional gadgets in the Notepad window. The gadget at the lower left of the window is the Next Page Gadget. Select this gadget to display the next page of your note. The gadget at the upper right is the Previous Page Gadget. Select this gadget to display the previous page of your note.

The Notepad Menus

The Notepad has four menus: Project, Font, Style, and Format. These are described below.

The Project Menu

New

Choose New to start a new note.

Open

Choose Open to open a note you previously saved. When you do, a requester appears. Select the gadget to the right of "Name:" and then change the name, if one appears, to make it the name you want.

To change what appears in the gadget, press the DEL key to delete the characters at and to the right of the Text Cursor. Press the BACKSPACE key to delete characters to the left of the cursor. You can use the left and right cursor keys to move the cursor. You can erase what you've typed in the gadget by pressing the right Amiga key and the X key at the same time. You can get back what was in the gadget before you started by pressing the right Amiga key and the Q key at the same time.

When you're done, press the RETURN key, then select the OK Gadget. The note whose name you type replaces the current note.

Save

Choose Save to save the current note. If you haven't already saved your note, a requester appears and lets you give it a name. Select the gadget to the right of "Name:", type in a name, press the RETURN key, then select the OK Gadget.

Save As

Choose Save As to save the current note under a new name. When you do, a requester appears. Select the gadget to the right of "Name:", then change the name, if one appears, to make it the name you want.

To change what appears in the gadget, press the DEL key to delete the characters at and to the right of the Text Cursor. Press the BACKSPACE key to delete characters to the left of the cursor. You can use the left and right cursor keys to move the cursor. You can erase what you've typed in the gadget by pressing the right Amiga key and the X key at the same time.

You can get back what was in the gadget before you started by pressing the right Amiga key and the Q key at the same time.

When you're done, press the RETURN key, then select the OK gadget.

Note that when choosing either Save or Save As, your note is saved in the drawer whose window was selected when you opened the Notepad.

Print

To print your note, you choose one of the items from the Print submenu. (To choose from the submenu, point to Print, then, with the Menu button still held down, move the Pointer to the right, point to one of the options—explained below—then release the Menu button.)

Choosing the Auto-size option prints an image that is approximately the same size as the image on the display. By choosing the Small option, you print an image whose width is one-quarter the width of the printer paper. (You use the Preferences tool to specify the width of the paper you're printing on. However, note that specifying different dimensions for the paper affects only notes printed when Draft option is chosen. The Draft option is described below.) By choosing the Medium option, you print an image whose width is one-half the width of the printer paper. By choosing the Large option, you print an image whose width is the full width of the printer paper.

If the Graphic option in the Print As submenu is chosen (see below), you print, for each page, a picture of what appears in the Notepad window. If the Draft option in the Print As submenu is chosen, you print plain text; different type sizes, styles, and fonts are not displayed.

Print As

From the submenu, choose Graphic if you want to print a pixel-by-pixel representation of the window in which your note appears. (If you have a color printer, you can print the note in color.) Choose Draft if you want to print only the text of the note.

Quit

Choose Quit when you're done and want to close the Notepad.

The Font Menu

From the Font menu, you can choose the typeface and type size for your note. The names of the seven different typefaces (Topaz, Ruby, Diamond, Opal, Emerald, Garnet, and Sapphire) are shown when you open the menu, while the available type sizes for each typeface are shown in submenus. To choose from the Font menu, point to a name of a typeface, then, with the Menu button still held down, move the Pointer to the right into the submenu that appears, point to a type size, then release the Menu button.

To see the available typefaces and type sizes, type in a note, then try each of the choices. The currently chosen typeface is shown with a check mark to the left of the menu item. In addition, the currently chosen type size is shown with a check mark if there is more than one size for the currently chosen typeface.

Note that the currently chosen typeface and type size apply to the entire note.

When you choose a new typeface and type size, a previous type size you chose for a different typeface may still have a check mark to the left of it. If this is the case and you attempt to choose the previous typeface again, nothing may happen. If this should occur, choose another type size for the previous face, then choose the size you want.

The Style Menu

From this menu, you can choose either standard (Plain) characters for your note, or change the type style by choosing Italic, Bold, Underlined, or any combination of the three. At any point in your note you can choose a new type style; this sets a marker in your note and all the characters from this marker to the next (or to the end of the file, if there are no other markers)

are changed to the new style. Try the different choices and watch how your note changes.

Note that when you choose *Italic*, **Bold**, or Underline, your choice stays in effect until you choose *Plain*.

There are command-key shortcuts for each of the items in this menu: press the right Amiga key and the P key at the same time to choose *Plain*; the right Amiga key and the I key to choose *Italic*; the right Amiga key and the B key to choose **Bold**; the right Amiga key and the U key to choose Underline. As a reminder, the shortcut for each item is shown in the menu to the right of the item.

The Format Menu

Paper Color

Choose *Paper Color* to change the background color for your note. You then choose a color from the four shown in the submenu (see the description of the *Font* menu above to learn how to choose from a submenu). The currently chosen color is indicated by a check mark.

Pen Color

Choose *Pen Color* to change the color of the characters in your note. You then choose a color from the four shown in the submenu (see the description of the *Font* menu above to learn how to choose from a submenu). The currently chosen color is indicated by a check mark.

Be sure that the pen color is different from the paper color; if you don't, you won't be able to read your note.

The Calculator

The Calculator is a standard four-function calculator you can use to add, subtract, multiply, and divide numbers. You can find the Calculator in the Utilities drawer on the Workbench.

Opening the Calculator

You open the Calculator by selecting its icon, then choosing Open from the Workbench menu. When you do, a window for the Calculator appears.

The Calculator Keys

In the Calculator window, each of the Calculator's "buttons" is a gadget. When the Calculator window is selected, there are two ways you can "press a button":

- Select the gadget by pointing within it, then clicking the Selection button on the mouse.
- For all but the $< -$ and $+ -$ "buttons," type the character or characters shown in the gadget. For example, you can clear the current entry by pressing the C key on the keyboard, then the E key.

The buttons for digits, the decimal point, and addition and subtraction are the same as those on other calculators. To multiply, use the * button. To divide, use the / button.

Selecting the CE button clears the current entry, while selecting the CA button clears the current entry and any previous entries.

Pressing the $+ -$ button changes the sign of the current entry. If the current entry is a positive number, it is changed to the negative number that corresponds to it. If the entry is negative, it becomes positive.

When you're entering a number, pressing the <- button deletes the last digit you entered.

To get a result, use the = button. From the keyboard, you can get a result by pressing the = key, the RETURN key, or the ENTER key.

Closing the Calculator

To close the Calculator, select the Close gadget in the upper left corner of the Calculator window.

The Icon Editor

With the Icon Editor, you can change the appearance of icons that appear on the Workbench. You can find the Icon Editor in the System drawer on the Workbench.

To use the Icon Editor, you must be familiar with the Amiga Disk Operating System (AmigaDOS) and the conventions it uses for file names. To learn about AmigaDOS, see the *AmigaDOS Manual*.

If you are a software developer, you can also use the Icon Editor to create icons for new tools, projects, and drawers. To learn how to create new icons, see the *Amiga ROM Kernel Manual*.

Opening the Icon Editor

You open the Icon Editor by selecting its icon, then choosing Open from the Workbench menu. When you do, a window for the Icon Editor appears. Next, a requester appears in the window that describes the different kinds of icons. Select the OK gadget to continue. (For information about the different icon types, see the *Amiga ROM Kernel Manual*.)

Loading an Icon

To select an icon you want to change, first select a frame—one of the nine boxes to the right of the Icon Editor window—by pointing within the frame, then clicking the Selection button. When you first open the Icon Editor, each of the nine frames contains the Icon Editor icon. The icon you select will replace what appears in the currently selected frame. Next, choose Load Data from the Disk menu. In the requester that appears, select the gadget immediately below the words “Enter Icon Name (.info Will Be Added)”, then enter the AmigaDOS description for the file or directory whose icon you want to change. This description can be either:

- the complete AmigaDOS file or directory description.
- an abbreviated description that specifies the relationship of the file or directory to the directory in which the Icon Editor resides.

For example, you can load the icon for the Trashcan by entering either:

```
df0:Trashcan
```

```
/Trashcan
```

NOTE: the icon *types* shown in the requester that appears when you open the Icon Editor are **not** the names of icons. To find the name of a file whose icon you want to change, use the AmigaDOS DIR command.

After you select the gadget, characters you type appear to the left of the Text Cursor (the marker that appears in the gadget when you select it). To move the cursor, use the left and right cursor keys.

There may already be text in the gadget when you select it. You can delete characters at and to the right of the Text Cursor by pressing the DEL key. Press the BACKSPACE key to delete characters to the left of the Text Cursor.

There are shortcuts you can use to change what appears in the gadget and to move the Text Cursor:

- Press the right Amiga key and Q key at the same time to get back what was in the gadget before you selected it.
- Press the right Amiga key and the X key at the same time to erase what appears in the gadget.
- Press the SHIFT key and the left cursor key at the same time to move the Text Cursor to the leftmost character in the gadget.
- Press the SHIFT key and the right cursor key at the same time to move the Text Cursor to the right of the rightmost character in the gadget.

When you've finished entering the file description, select Load Icon Image. If you decide not to select an icon, select Cancel The Load.

Selecting Additional Icons

With the Icon Editor, you can work with up to nine icons at the same time. To select an additional icon, first select the frame in which you want the icon to appear, then choose Load Data from the Disk menu.

Changing an Icon

A magnified view of the currently selected frame is shown at the left of the Icon Editor window. To change the appearance of an icon, you select the frame in which it appears, then change what appears in the magnified view. The techniques for changing the view are described below.

Changing an Icon's Colors

To change the color of an individual pixel in an icon, choose a color from the Color menu, point to the pixel you want to change in the magnified view, then click the Selection button. By holding down the Selection button while you slowly move the mouse, you can add color to larger areas.

Filling Areas

With the Icon Editor's Flood Fill feature, you can fill a contiguous area that is all the same color with another color. To fill an area, choose the color you want to fill with from the Color menu, then choose Flood Fill from the Misc menu. Next, point to the area in the magnified view that you want to fill, then click the Selection button.

Adding Text to an Icon

There are six steps to adding text to an icon:

1. Choose Write Into Frame from the Text menu.
2. In the requester that appears, select the gadget immediately below the words "Icon Text," then enter up to eight characters that you want to add to the icon. The characters you type appear to the left of the Text Cursor (the marker that appears in the gadget when you select it). To move the cursor, use the left and right cursor keys.

There may already be text in the gadget when you select it. You can delete characters at and to the right of the cursor by pressing the DEL key. Press the BACKSPACE key to delete characters to the left of the cursor.

There are shortcuts you can use to change what appears in the gadget and to move the Text Cursor:

- Press the right Amiga key and Q key at the same time to get back what was in the gadget before you selected it.
 - Press the right Amiga key and the X key at the same time to erase what appears in the gadget.
 - Press the SHIFT key and the left cursor key at the same time to move the Text Cursor to the leftmost character in the gadget.
 - Press the SHIFT key and the right cursor key at the same time to move the Text Cursor to the right of the rightmost character in the gadget.
3. Select the foreground and background colors for the text. (How the foreground and background colors are used to display text depends on the display mode you select. Display modes for text are described below.) To change the foreground color, point within the color immediately to the right of the word Foreground, then click the Selection button one or more times until the color you want appears. Select the background color in the same way.
 4. There is only one font you can choose for your text. This font, called Topaz, is the same one used by the Workbench for menus and icons. You can, however, select one of two font sizes: TOPAZ_SIXTY is the larger, TOPAZ_EIGHTY the smaller. If the size you want does not appear in the gadget labeled Font, select the gadget to change to the other size.
 5. Select one of the four display modes for text. These modes are:
 - JAM1, where text is shown in the currently selected foreground color without a background
 - JAM2, where text is shown in the foreground color against the currently selected background color

- **COMPLEMENT**, where each pixel that makes up the text is the color “opposite” the color of the pixel that it replaces. (To see how this works, add text to an icon containing all four colors, then move the text as described below.)
- **INVERSVID**, where the text is surrounded by the currently selected foreground color. When you add INVERSVID text to an icon, the background for the text replaces existing pixels in the icon while the text itself does not.

To change the display mode, point within the gadget labeled Mode, then click the Selection button one or more times until the name of the mode you want appears. In the gadget, note that the name of the mode is displayed in the gadget using the currently selected foreground color, background color, and display mode.

6. Select the Position gadget to add the text to the icon. In the requester that appears, select the arrows to move the text up, down, left, or right. Select the Single gadget if you want the text to move only a single pixel each time you select an arrow. Select Repeat if you want the text to continue to move if you hold down the Selection button after you select an arrow. When the text is where you want it, select OK. If you change your mind, select Cancel to return to the previous requester without adding text to the icon.

When you’re through adding text, select OK. If you want to start over with the icon as it was before you chose Write Into Frame, select Reset. If you decide you don’t want to add text to the icon, select Cancel.

Using the Undo Feature

If you think that a change you’re about to make to an icon may not turn out the way you want, choose Snapshot Frame from the Copy menu before you make the change. When you do, the Icon Editor saves a copy of the currently selected frame. If things go wrong, you can get back what you had before by choosing Undo Frame from the Copy menu.

NOTE: When you choose Undo Frame, the frame that was saved when you last chose Snapshot Frame replaces the **currently selected frame**. After you choose Undo Frame, the **previous contents of the currently selected frame are no longer available**.

Working with Frames

The Icon Editor's nine frames let you work with more than one icon at the same time. You can also use the frames to keep and compare more than one version of the same icon. Listed below are techniques you can use when working with frames.

Copying a Frame

To copy a frame, first select the frame into which you want to make the copy. Next, choose the frame you want to copy from the submenu that appears when you point to From Frame in the Copy menu.

Moving the Image within a Frame

To move the image within a frame, choose In-Frame from the Move menu. In the requester that appears, select the arrows to move the image up, down, left, or right. Select the Single gadget if you want the image to move only a single pixel each time you select an arrow. Select Repeat if you want the image to continue to move if you hold down the Selection button when you select an arrow.

The square gadget surrounded by the arrows is the Restore gadget. Select this gadget to put the image back where it was before you chose In-Frame.

When the image is where you want it, select OK. If you change your mind, select Cancel to get back what you had before you chose In-Frame.

Exchanging Frames

To switch the positions of two frames, first select one of the two frames. Next, choose the other frame from the submenu that appears when you point to Exchange With Frame in the Move menu.

Merging Frames

To combine the contents of two frames, first select one of the frames. (The combination you create will replace what appears in this frame.) Next, choose the other frame from the submenu that appears when you point to Merge With Frame in the Copy menu.

When pixels in the two frames overlap, the color that appears is determined as follows:

- If color 0 (the color at the top of the Color menu) overlaps with any other color, the other color is displayed.
- If color 3 (the color at the bottom of the Color menu) overlaps with any other color, color 3 is displayed.
- If colors 1 and 2 (the two colors in the middle of the Color menu) overlap, color 3 (the color at the bottom of the Color menu) is displayed.

Highlighting an Icon

When you select an icon on the Workbench, it is highlighted to indicate that it's selected. There are two ways an icon can be highlighted:

- It can be shown in inverse video. In inverse video, any part of an icon normally shown using color 0 (the color at the top of the Color menu) becomes color 3 (the color at the bottom of the Color menu); color 1

(the color just below color 0 in the menu) becomes color 2; color 2 becomes color 1; color 3 becomes Color 0.

- It can be “backfilled.” A backfilled icon is the same as an icon shown in inverse video, with one exception: contiguous areas of an icon normally shown in color 0 that adjoin any of the borders of the icon remain color 0 when the icon is highlighted.

To highlight an icon in inverse video, choose Inverse from the HiLite menu before you save the icon. To backfill a highlighted icon, choose Backfill from the HiLite menu before you save the icon.

Specifying the Border Width

Below each icon on the Workbench is the name of the file that the icon represents. The Icon Editor lets you choose either to put one blank line between the icon’s image and its name or not to put space between the icon and the image. From the Misc menu, choose either 0 (for no space) or 1 (for one line between the image and the name) from the submenu that appears when you point to the Set Bottom Border item.

Saving an Icon

When you save an icon, you replace an icon on the Workbench with the icon in the currently selected frame. However, the type of the icon you replace and the type of the icon that was most recently loaded into the currently selected frame must be the same. There are five types of icons:

TYPE	REPRESENTS	EXAMPLE
<i>Disk</i>	Disk drawers	Workbench disk icon
<i>Drawer</i>	Drawers other than disk drawers	System icon
<i>Tool</i>	Tools	Icon Editor icon
<i>Project</i>	Projects	Icon for a Notepad note
<i>Garbage</i>	A drawer that cannot be moved to another drawer	Trashcan icon

When you open the Icon Editor, the Icon Editor icon is loaded into all nine frames. Because the Icon Editor icon represents a tool, you must load another icon if you want to replace an icon of another type.

There are three steps to saving an icon:

1. Select the frame containing the icon.
2. Choose Save Data from the Disk menu. In the requester that appears, select the gadget immediately below the words "Enter Icon Name (.info Will Be Added)" and then enter the AmigaDOS description for the file or directory whose icon you want to replace. This description can be either:
 - the complete AmigaDOS file or directory description
 - an abbreviated description that specifies the relationship of the file or directory to the directory in which the Icon Editor resides. For example, you can replace the icon for the Trashcan by entering either:

df0:Trashcan

/Trashcan

After you select the gadget, characters you type appear to the left of the Text Cursor (the marker that appears in the gadget when you select it). To move the cursor, use the left and right cursor keys.

There may already be text in the gadget when you select it. You can delete characters at and to the right of the Text Cursor by pressing the DEL key. Press the BACKSPACE key to delete characters to the left of the Text Cursor.

There are shortcuts you can use to change what appears in the gadget and to move the Text Cursor:

- Press the right Amiga key and Q key at the same time to get back what was in the gadget before you selected it.
 - Press the right Amiga key and the X key at the same time to erase what appears in the gadget.
 - Press the SHIFT key and the left cursor key at the same time to move the Text Cursor to the leftmost character in the gadget.
 - Press the SHIFT key and the right cursor key at the same time to move the Text Cursor to the right of the rightmost character in the gadget.
3. When you've finished entering the file description, there are two ways to save the icon:
- If you want the icon to include the entire image that's in the frame, select Save Full Image.

- If you want the icon to include only a part of the image that's in the frame, select **Frame** and **Save**. Next, "frame" within a rectangle the part of the magnified view you want to include in the icon: point to a place in the magnified view where you want the top left corner of the rectangle, then click the **Selection** button. Move the mouse to change the size of the rectangle. When you've framed within the rectangle the part the image you want, click the **Selection** button a second time to save the icon. (If you change your mind about saving the icon after you've selected the top left corner, move the **Pointer** outside the magnified view and click a mouse button.)

If you decide not to save an icon after you've chosen **Save Data**, select **Cancel** the **Save** in the requester.

When you look on the **Workbench** for an icon you've saved, remember that it doesn't replace the previous icon until the next time you open the drawer that contains it.

Stopping the Icon Editor

When you are finished using the **Icon Editor**, close it by selecting the **Close Gadget** in the upper left corner of the **Icon Editor** window.

Appendix B: AmigaDOS Messages

When error messages appear, they often include *error numbers*. These numbers are generated by the Amiga Disk Operating System (AmigaDOS). This appendix lists:

- error numbers that are likely to appear when you're using the Workbench
- the AmigaDOS messages that correspond to each error number
- suggestions for what to do when an error occurs

For more information about the meaning of a specific error number and for explanations of error numbers not listed here, see the *AmigaDOS User's Manual*.

103 insufficient free store: The Amiga needs more memory to perform an operation. Close one or more windows, then try the operation again. In rare cases, you may have to reset the Amiga to reclaim sufficient memory to continue.

This error can also occur if you attempt to open a tool that requires more memory than is installed in your Amiga. For information about how much memory a tool needs, see the manual for the tool.

121 file is not an object module: This error may occur if you try to open a tool that has been damaged. Try making a new copy of the tool from your original disk.

202 object in use: Another tool is using the project or tool you want. You may have to wait for the other tool to finish.

203 object already exists: You cannot give an object the same name as an existing object. Either give the existing object a different name or delete it so you can reuse its name.

204 directory not found: A faulty tool may have created an icon for a drawer without creating the actual drawer. Attempt to identify the tool that created the icon, then consult your Amiga dealer.

- 205 object not found: A tool or project that the Amiga needs to locate is not present on the disk. This can happen if (1) you've moved a tool to a different drawer, then try to open a project created with that tool (2) you've renamed either the System or Utilities drawer on the Workbench disk, then tried to open a project created with a tool that's in the drawer, or (3) the disk containing a tool you need is not in a disk drive.
- 210 invalid stream component name: When renaming a tool, project, drawer, or disk, you have used an invalid character.
- 213 disk not validated: If a disk light was on when you removed a disk or reset the Workbench, the information on the disk that was in that drive may be unusable. This error may also occur if the disk surface has been damaged.
- 214 disk write-protected: You have asked the Amiga to add information to your disk when the protect tab is in the protected position. (See pages 3-2 and 3-3 for information about protect tabs.) Either change the position of the protect tab or use a disk whose protect tab is in the unprotected position.
- 218 device not mounted: This error occurs when a tool needs a disk that is not currently in a disk drive.
- 221 disk full: There is not enough free storage on the disk to do what you have requested. Try emptying the Trashcan (see page 4-17). If this doesn't work, you must either delete objects on the disk or use a different disk.
- 222 file is protected from deletion: A tool, project, or drawer cannot be deleted because it is protected. Select the icon for the object, choose Info from the Workbench menu, then change its status to DELETABLE.
- 225 not a DOS disk: Either the disk has not been formatted or it is a Kickstart disk. Use a different disk, or, if you wish to erase all information currently on the disk, choose Initialize from the Disk menu.
- 226 no disk in drive: A tool expected to find a disk in a disk drive that wasn't there. Insert the disk needed by the tool you're using.

Appendix C: Changing the Pointer

You can use the Preferences tool to modify the Pointer. The following instructions tell you how.

Opening Preferences

You can find the Preferences tool on the Workbench disk. To open Preferences, select its icon, then choose Open from the Workbench menu.

To learn more about Preferences, see Chapter 7.

The Pointer Editing Window

When the Preferences screen appears, select the Edit Pointer Gadget near the lower right-hand corner of the screen. In a moment, a window appears. In this window—the *Pointer Editing Window*—a magnified image of the Pointer appears at the upper left. It is this magnified image that you modify to change the Pointer. To the right of the magnified view are copies of the Pointer that appear against each of the four Workbench colors; these copies let you judge how the Pointer will look against the colors on the Workbench.

Changing the Colors

The colors you use to draw the Pointer appear near the bottom of the window. These colors can be different from those used for the Workbench. You can modify the three colors to the left in the same way you modify the Workbench colors: by changing the R, G, and B values for each. The rightmost “color” is not a color at all: any parts of the Pointer you draw with it are transparent. When you move the Pointer, colors on the Workbench behind any transparent parts of the Pointer show through. If

you modify the Pointer colors then want to get back the last colors that were saved, select the ResetColor Gadget.

Changing the Pointer

To modify the Pointer, select one of the colors or transparent, point to a place in the magnified view where you want a pixel of that color, then click the Selection button. If you want to start from scratch, select Clear to make all the pixels transparent. (If, after you make changes, you'd rather have the old Pointer back, select Restore.)

Changing the Point

Every Pointer has a single pixel called the *point*. To point to something on the display, position the Pointer so that this pixel is over it.

In the magnified view of the Pointer, the point is indicated by a smaller square within one of the pixels. To change the Pointer's point, select Set Point, point to the pixel in the magnified view you want as the point, then click the Selection button.

When you're done and are happy with the Pointer you've created, select OK. To get back to the main Preferences screen without changing the previous Pointer, select Cancel.

Glossary

add-on	A printer, game controller, modem, or other external component you use with an Amiga.
alert	A message displayed when there is a serious problem with an Amiga.
ALT key	One of two keys next to the Amiga keys at the bottom of the keyboard .
Amiga keyboard	The keyboard similar to a typewriter's attached to an Amiga.
Amiga key	One of the two keys on an Amiga keyboard to the left and right of the Space Bar . You use the left Amiga key for selection shortcuts and the right Amiga key for menu shortcuts . You also use the Amiga keys when operating the Amiga without a mouse .

Amiga Memory Expansion Cartridge	A cartridge you plug into the front of the Amiga to add 256K of memory .
Amiga Monitor	An RGB monitor made for use with the Amiga.
AmigaDOS	The Amiga disk operating system.
audio connector	The connector you use when attaching audio equipment with an Amiga.
audio signal	The output from one of the two audio connectors on the Amiga.
available menu item	An item in a menu that you can choose .
Back Gadget	A gadget you select to move a window or screen behind other windows or screens that overlap it.
baud rate	The rate at which information is transferred through the serial connector .
cable	A set of insulated wires used either to connect the parts of the Amiga or to connect add-ons to the Amiga.
choose	To pick a menu item . You normally choose menu items with the aid of the Menu button .
chosen option	An option that is currently in effect.
click	1. To press and release a mouse button . 2. The action you perform when you click .
Clipboard	A place where parts of a project that you cut or copy are kept.
clipping	A part of a project that has been cut or copied and put on the Clipboard .
Clock	A tool that lets you display the time on the Workbench .

close	1. To remove a window , requester , or screen from the display . 2. To put away a tool or project .
Close Gadget	A gadget that you select to close a window or screen .
Color Palette	The set of colors available in a screen .
column	A set of adjoining pixels or characters that form a vertical line on the video display .
command	A menu item that, when you choose it, instructs the Amiga to perform a task. <i>Compare</i> option .
composite video monitor	<i>See</i> NTSC monitor
connector	Any of the places on the outside of the Amiga to which you can attach external equipment.
copy	To replicate a tool , project , drawer , or disk .
cursor key	One of four keys with an arrow on top at the right of the keyboard . You press these keys either to move the Text Cursor or, by pressing an Amiga key at the same time, to move the Pointer .
custom screen	A screen created by a tool for its own use and, optionally, for use by other tools.
cut	To remove part of a project and place it on the Clipboard . <i>Compare</i> erase .
Demos drawer	A drawer on the Workbench disk in which demonstration tools are kept.
destination disk	When copying disks, the disk that receives the copy. <i>Compare</i> source disk .
discard	To dispose of a project , tool , or drawer by putting it in the Trashcan .
disk	A medium for storing and retrieving information.
disk drawer	A drawer that contains the contents of a disk .

disk drive	A device for reading information from and saving information on a disk .
disk drive light	A light on the front of a disk drive that shows when the disk cannot safely be removed.
disk gauge	A indicator at the left of the window for a open disk that shows how much free storage is available.
display	That which appears on a video monitor or television.
Display Centering Gadget	A gadget provided by Preferences for centering the image on the display .
double click [n.]	The action you perform when you quickly press and release a mouse button twice.
double-click [v.]	To quickly press and release a mouse button twice.
Double-Click Slider	A gadget provided by Preferences for changing the maximum length of time between the two clicks of a double click .
drag	To move an icon , gadget , window , or screen by putting the Pointer over what you want to move, holding down the Selection button , and moving the mouse .
Drag Bar	That portion of a Title Bar that contains no gadgets . You drag the Drag Bar to move a window or screen .
drawer	A place where tools , projects , and other drawers are kept.
edit	To change the contents of a project .
empty	To remove from the Trashcan any projects , tools , or drawers you've discarded . When you empty the Trashcan , you can no longer get back any of the projects , tools , or drawers that were in it.

erase	To remove part of a project without putting what you've removed on the Clipboard . <i>Compare cut.</i>
error numbers	Numbers that identify AmigaDOS errors.
exit gadget	A gadget in a requester that you select to close the requester.
Extended Selection	A technique for selecting more than one icon or gadget at a time. To use it, you select with the Shift key held down.
Extras disk	One of three microdisks packaged with the Amiga.
feature	A noteworthy property of a tool .
Front Gadget	A gadget that you select to move a window or screen to the front of other windows or screens that overlap it.
gadget	Any of the facilities provided within a window , requester , or screen , such as Scroll Bars , Sizing Gadgets , and Close Gadgets , that you use to change what's being displayed or to communicate with a tool .
ghost [adj.]	Displayed less distinctly to indicate unavailability.
ghost gadget	An gadget that is displayed less distinctly to indicate that it is not currently available.
ghost icon	An icon that is displayed less distinctly to indicate that it is not currently available.
ghost menu item	A menu item that is displayed less distinctly to indicate that it is not currently available.
Graphicraft	The Amiga graphic arts tool .
highlight	To display something in a way that distinguishes it. Normally, something is highlighted to indicate that it is selected .
hold down	To press a mouse button or a key on the keyboard without releasing it.

icon	A visual representation of a tool , project , drawer , or disk .
initialize	To prepare a disk so that it can be used by an Amiga.
item = menu item	
key	Any of the switches on a keyboard .
Key Repeat Slider	A gadget provided by Preferences for changing the speed at which keys on the keyboard repeat when you hold them down.
keyboard	A set of keys used for typing or for giving other information to an Amiga.
keyboard cable	The cable used to connect the keyboard to the main unit .
keyboard connector	The connector on the main unit to which you attach the keyboard cable .
Kickstart disk	A microdisk that contains information an Amiga needs to begin operating.
Look Again	A gadget in Open Requesters that you select to update the Project List .
main unit	The largest component packaged with the Amiga. The main unit contains the central processor and other circuitry, memory , and an internal disk drive .
memory	Electronic circuits used to store information.
memory meter	The indicator in the Title Bar for the Workbench screen that shows the amount of free RAM in bytes.
menu	A list of items you can choose from.
Menu Bar	A strip at the top of a screen that contains menu titles . The menu bar for the selected window appears when you hold down the Menu button .

Menu button	The right-hand button on the mouse .
menu item	One of the choices in a menu .
menu shortcut	A way of choosing a menu item by pressing a key on the keyboard while holding down the right Amiga key.
menu title	The name that for a menu that appears in the Menu Bar .
microdisk	A 3 1/2-inch flexible disk .
mouse	A device you move on a flat surface to move the Pointer .
mouse ball	The ball on the bottom of the mouse that rolls as you move the mouse.
mouse button	One of the two buttons on a mouse .
mouse speed	A option provided by Preferences for varying how many inches you must move the mouse to move the Pointer roughly a third of the way across the display .
Multiple Choice	A technique for choosing more than one option at a time. To use it, you hold down the Menu button , then click the Selection button with the Pointer over the options you want.
Notepad	A tool provided with the Workbench for writing short messages.
NTSC monitor	A type of color monitor that can be used with the Amiga .
OK Gadget	A gadget in a requester that you select to carry out what you've asked for in the requester.
object	A tool , project , drawer , or disk .
open	<ol style="list-style-type: none"> 1. To display a window, requester, or screen. 2. To make a tool or project available.

Open Requester	A requester from which you select a project you want to open.
option	A feature of a tool that, once you choose it, persists until you choose another, mutually exclusive feature.
palette = color palette	
parallel port	A connector on the back of the Amiga that you use to attach printers and other add-ons.
paste	To copy the contents of the Clipboard into a project.
peripheral = add-on	
pixel	One of the small elements that together make up the video display.
pixel color	The color of a pixel on the display.
point	To position the tip of the Pointer over an object on the display.
Pointer	The thing that moves on the display when you move the mouse. You use the Pointer to (1) select icons and gadgets (2) choose menu items.
Pointer Editing Window	The window displayed by Preferences in which you change the Pointer.
pop-up requester	A requester that you open by double-clicking the Menu button.
port	A connector for attaching add-ons to the Amiga.
Preferences	A tool that allows you to change various settings of an Amiga, including the time, the Workbench font, the speed that keys on the keyboard repeat when you hold them down, and the interval before keys begin repeating.
press	To push down a mouse button or key on a keyboard.

Printer Requester	A requester provided by Preferences that you use to change printer settings.
project	A place where information created or used by a tool is kept. An example of a project is a note you write with the Notepad .
Project disk	A disk used to store projects .
Project List	The list of projects you can open from an Open Requester .
protect	To prevent the contents of a project , tool , drawer , or disk from being changed.
protect tab	A plastic tab on a microdisk that, when you slide it so that there is a hole through the disk, prevents the information on that disk from being changed.
protected disk	A disk whose contents cannot be modified.
RAM = random-access memory	
random-access memory	Memory whose contents can be changed while the computer is operating.
redraw	To redisplay what appears in a screen.
release	To stop pressing or holding down a mouse button.
rename	To change the name of a tool , project , disk , or drawer .
Repeat Delay Slider	A gadget provided by Preferences for changing how long it takes for a key on the keyboard to repeat when you hold it down.
requester	A rectangular region in a screen which you use to give information to a tool . When a requester appears, you must select a gadget in the requester to close the requester before you can do anything else in the window in which the requester appears.

reset	To set up the Workbench again after it has begun working.
resolution	On a video display , the number of pixels that can be displayed in the horizontal and vertical directions.
reverse video	Displayed using colors opposite those normally used. For example, if letters are normally black on a white background, white letters on a black background are said to be shown in reverse video.
RGB connector	The connector on the back of the main unit that you use to attach an RGB monitor to the Amiga.
RGB monitor	A video monitor , such as the Amiga Monitor , that interprets signals for red, green, and blue to create colors.
row	A set of adjoining pixels that form a horizontal line on the video display .
save	To copy the contents of a project onto a disk .
screen	A full-width area of the video display with the same color palette , resolution , and other attributes.
scroll	To move the contents of a project within a window .
Scroll Arrows	Arrows at both ends of a Scroll Bar . To move slowly forward through a project , put the Pointer over the bottom Scroll Arrow and hold down the Selection button . To move slowly backward through a project, put the Pointer over the top Scroll Arrow and hold down the Selection button .
Scroll Bar	A gadget you use to display different parts of a project .
Scroll Box	The rectangular area within a Scroll Bar that you drag to move rapidly from one part of a project or list to another.

submenu	An additional menu that appears to the side of a menu.
submenu title	An item in a menu that, when you place the Pointer over it, causes a submenu to appear.
select	To pick an icon , gadget , or a part of a project using the Selection button .
Selection button	The left-hand button on the mouse .
selected option	An option that is currently in effect.
selected window	The window that you do work in. Only one window can be selected at a time.
selection shortcut	A quick way to select something by pressing a key on the keyboard while holding down the left Amiga key .
serial port	A connector on the back of the Amiga which you use to attach modems and other add-ons .
set up	To start the Workbench .
shortcut	A quick way, from the keyboard , to (1) choose a menu item (2) select an icon or gadget . See menu shortcut and selection shortcut .
size	To change the dimensions of a window or screen .
Sizing Gadget	A gadget you drag to change the size of a window .
slider	A gadget you use to pick a value within a range, normally by dragging an arrow along a line.
source disk	When copying disks , the disk that is being copied. <i>Compare destination disk.</i>
Space Bar	The long key at the bottom of the keyboard that you press to enter a blank space.
status	A characteristic of a tool , project , drawer , or disk , such as whether it is deletable or not deletable.

string	A set of one or more characters.
String Gadget	A gadget you use to enter or modify strings .
Text Cursor	In projects containing text, a marker that indicates your position in the project.
timesaver	Any technique provided by a tool to save you time. A shortcut is one kind of timesaver; another is double-clicking the Menu button to get a pop-up requester .
Title Bar	A strip at the top of a screen or window that contains the name of the screen or window.
Title Gadget	A gadget in Open Requesters that you use to type in the title of the project you want to open.
tool	A facility for working with information. For example, the Graphicraft tool lets you create and change visual information that takes the form of a painting .
Trashcan	The place where you put projects , tools , and drawers to discard them.
TV modulator	A device used to connect a television set to an Amiga.
TV modulator cable	A cable you use to connect the TV modulator to the TV switch box .
TV switch box	A device that allows you to connect both an Amiga and an antenna to a television and switch between them.
type	The kind of object (tool , project , drawer , or disk) an object is.
type font	A set of letters, numbers, and symbols that are the same type size and of the same typeface .
type size	The size of text.
type style	A variation of a typeface , such as italic or bold.

typeface	A set of letters, numbers, and symbols that share the same design.
unavailable menu item	Any item in a menu that you cannot choose. Unavailable menu items are shown as ghost items.
video cable	The cable you use to connect an RGB monitor to an Amiga.
video equipment	A video monitor or television.
video monitor	A device for displaying visual information from an Amiga.
Wait Pointer	A special shape for the Pointer that indicates that you must wait before continuing.
window	A rectangular area in a screen. Tools use windows to accept and present information.
Workbench	A tool you use to get and manipulate the facilities of the Amiga. You use the Workbench to open, close, move, create, and delete projects, tools and drawers, to copy disks, as well as to perform other operations.
Workbench disk	A disk that contains the Workbench.
Workbench screen	The screen used by the Workbench and other tools.
working disk	A copy of an original disk that came with the Amiga or with a tool.
“Y” adapter	An adapter that lets you combine both of the audio signals from an Amiga into a single audio signal. You use this adapter to connect the Amiga Monitor to an Amiga.



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1. The first part of the document is a list of names and their corresponding dates of birth. The names are listed in a single column, and the dates are listed in a single column to the right of the names. The names are: John Doe, Jane Doe, and John Doe. The dates are: 1950, 1955, and 1960.

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